

FIXES ALL AROUND
Oracle releases 101 patches as part of its quarterly software update. **PAGE 18**

YOGI BERRA, PROJECT MANAGER
IT project leaders can learn a lot from former baseball manager Yogi Berra. **PAGE 44**

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E-VOTING

E-voting Technology Faces Critical Test

Challenges to results likely if systems fail during election

BY MARY L. SCHMIDT

The widespread use of controversial electronic voting machines could lead to chaos after next month's midterm elections if, as some critics suggest, losing candidates and their supporters move to challenge the results.

Working under a vaguely worded federal mandate, election officials nationwide have replaced lever-activated machines, punch-card sys-

tems and other outmoded voting methods with electronic equipment.

Much of the criticism to date has been aimed at touch-screen systems, or direct recording electronic devices, which critics say aren't rigorously tested and certified and are unreliable and prone to crashing. Critics also contend that DREs are inherently vulnerable to hacking and viruses.

"The potential definitely is there for fraud," said Bruce Funk, former elections director for Emery County, Utah.

The note family, long spurred by the passage of the MMA, began in 2002.

E-waste success depends on water attitudes and best practices, says Robert L. Mitchell

Feds Start Small on Smart IDs

BY JANUAR VLAJAN

Several federal agencies said last week that they're ready to start distributing smart ID cards to workers by Friday, as mandated by a directive issued in 2004 by President Bush. But some of the initial rollouts will be very small and will focus solely on controlling access to

buildings — not IT systems.

For instance, the Social Security Administration became at least technically compliant with the directive last week when it issued one of the new ID cards to Commissioner Jo Anne Barnhart. SSA spokeswoman Kia Green said the agency expects to hand out

more cards in the coming weeks but is "still in the process of finalizing the details." She added that the SSA hopes to issue cards to all of its employees and contractors by the end of September 2008, which is the deadline for doing so.

Another agency that said it will meet this week's deadline in a small way is the Environmental Protection Agency. The EPA plans to issue the so-called personal identity verification, or PIV, cards to "a small handful" of employees, said spokesman Dale Kemery. But he added that because of budgetary and technical considerations, making the ID cards available throughout the 18,000-worker agency will be "a fairly long rollout." He de-

Smart IDs, page 59



The Team at the Top

When assembling the top tier of their IT organizations, today's CIOs aren't looking for technologists; they're looking for business leaders.

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_INFRASTRUCTURE LOG

_DAY 25: They're in the cafeteria!! AAAGGGHHH!! These useless things can't work with each other. They aren't scalable. They aren't responsive. And you can't adjust new capacity on the fly. The horror.

_So many of them, I have to eat standing up. My arches are killing me. And I got avocado on my shirt.

_DAY 26: The answer: IBM BladeCenter® with Dual-Core Intel® Xeon® Processors to boost performance and balance workloads. Its self-automating features make it easy to manage, and it has more blades per chassis for a smaller footprint. The BladeCenter even opened up its specs, so the things we buy today can work with the things we buy tomorrow.

_I can eat my turkey-avocado sandwiches in peace again.
Mmmm...



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10.23.06

The Virtual Procrastinators

In the Technology section, we find that, CIOs are not just procrastinating. They are also procrastinating. But when it comes to the nation's CIOs, back to the future with us.



Managers' Forum

In the Management section: Why do project managers resist the latest and greatest tools? And what's the point of a project plan anyway? Paul Glen comments, and readers talk back. **Page 48**

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16 EMC unveils two upgraded Charlier arrays that support both the BSCSI and Fibre Channel protocols, plus an entry-level Symmetrix array and five Celerra NAS systems.

18 Global Dispatches: Microsoft now says Windows Vista will ship on time in Europe.

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20 O&A: Mark Canepa, the new president and CEO of Extreme Networks, talks about his plans for the troubled company — which faces declining revenue, Nasdaq delisting and a stock-options investigation.

55 Cline enters the video-conferencing market with two systems designed for conference rooms. Meanwhile, established vendor Polycom announces a line of three high-definition systems.

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45 Career Watch: Jerry Luftman of the Society for Information Management discusses employers' concerns about attracting, developing and retaining IT professionals. Plus, we look at the latest employment numbers; the skills CIOs are seeking; and your employer's health care costs.

OPINIONS

On the Mark: Mark Hall suggests that new video e-learning tools might make IT a star to end users.



Don Tennant contends that Mark Hall's appointment of former NCR colleague Jon Hoak as chief ethics officer smacks of cronyism and self-preservation.

Therion A. May exhorts his readers to be the thought leaders who will clarify IT's role for the business.

John Halamaia proposes Pelic's Law to explain how power consumption and heat issues limit a data center's server capacity.

Robert L. Mitchell says solving e-voting's technical problems will be the easy part. Implementing it properly will be harder.

Burt Perkins advises treating your customers as if they could take their IT business elsewhere. More and more, they can.

Frankly Speaking: Frank Hayes says the password is kRigZee.

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ONLINE

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Should You Be Watching?
SECURITY: Jay Cline knows what the law allows when it comes to monitoring employees, but he wonders whether it's wise to do all that the law permits.

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Four Tips When Going Mobile

NETWORKING: An expert provides suggestions on how to succeed when your organization decides to scale up its mobile access.

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Better Planning

SECURITY: When the lines between policies, controls and specifications get muddy, your IT security plan suffers. Columnist Jon Espenchied explains the difference between the *why* and the *how* of a solid security plan.

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Peripheral Protection

MOBILE/WHITEBOARD: The season is around the corner, and new products can help protect you from nasty germs left on office phones, keyboards and mice. The bad news is that you're probably not using any of them.

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AT DEADLINE

EMC to Fire 1,250 As Q3 Profits Drop

EMC Corp. plans to cut up to 1,250 jobs as part of an effort to consolidate operations after acquiring 21 companies over the past three years. EMC employs 31,000 people. The announcement came as EMC reported third-quarter earnings of \$263.7 million, down from the year-earlier total of \$427.7 million. Third-quarter revenue increased to \$2.9 billion from \$2.4 billion. EMC said most of the job cuts will be redundant middle management posts.

Software Sales Boost SAP Sales, Profit

SAP AG added continued growth in sales of its business applications for strong third-quarter revenue and profit gains.

Q3 1998 vs. Q3 1997, in millions			
	Revenue	Operating Profit	Operating Margin
Q3 98	\$2,900	\$489M	16.9%
Q3 97	\$2,540	\$420M	16.5%

Microsoft Releases Windows Patch

Microsoft Corp. has released a Windows security patch that it published on Oct. 10 because the software did not work properly on Windows 2000 systems. The company acknowledged that the original patch did not correctly configure a Windows Registry setting called a "file M..." to prevent Windows 2000 from running software that could be attacked. The patch, described in security bulletin MS08-061, was created to fix problems in the Windows 2000 server.

EDS Increases Stake in Indian Outsourcer

Electronic Data Systems Corp. has agreed to purchase an additional 20% stake in Bangalore, India-based outsourcer Mahatma BPL Ltd. for about \$150 million. The offer requires the approval of Mahatma shareholders. If the sale is approved, EDS would own about 77% of the company. EDS had acquired a 52% stake earlier this year and merged its own Indian subsidiary with Mahatma.

IBM Meshes Integration, Data Management Tools

Bundles WebSphere products together, unifies user interfaces and metadata

BY PATRICK THIBODEAU
ANALYST, CALP

HERALDED BY a seven-piece band and the concert-like trappings of flames, smoke and strobe lights, IBM last week announced a software offering that integrates nine of its tools for managing various types of data and making the information available to end users.

IBM's Information Server, which will be available next month, is intended to be a one-stop shop for companies that are seeking tools to help them deal with data-intensive applications such as business intelligence. Priced at \$125,000 and up, depending on the number of product modules purchased, Information Server combines existing data cleansing, integration and metadata management tools from IBM's WebSphere product line.

Unified Approach

But IBM officials said the bundled offering is based on a new architecture that provides common metadata, unified user interfaces and a set of shared services for tasks such as security and reporting.

Information Server supports service-oriented architectures and includes connectors to various databases and sources of unstructured data, as well as mainframe and packaged applications.

Amby Goyal, IBM's general manager of information management, said at the company's inaugural Information on Demand Global Conference here that until now, IT staffs have had to configure applications to make calls to other data sources to obtain information for end users. But Information Server will enable users to "get information from multiple

sources, reconciled and bi-directional," Goyal said. Frank Brooks, chief data architect at BlueCross BlueShield of Tennessee Inc., already uses many of IBM's data management tools. But Brooks said that data integration problems "are getting far too complex" for any one product to handle.

Managing data used to mean taking information from a relational database and running a report, Brooks said.

"Now, it's not just internal data; it's external, and it's also content" — meaning e-mail and other material that isn't stored in a database, he added. Brooks said that IBM has been good about working with third-party vendors on product integration. "I think they

realize that they can't provide every possible solution," he said. For instance, the insurer uses a tool developed by ClearForest Corp. to analyze unstructured data in conjunction with IBM's tools.

Information Server will work with various third-party tools, said IBM officials. But unlike the WebSphere software that has been incorporated into Information Server, the third-party tools won't be able to use the full capabilities of the bundled offering.

Hurkan Balkir, IT director of marketing solutions at Experian Group Ltd.'s offices in Schaumburg, Ill., said the credit reporting firm had to develop its own metadata to connect the IBM data management tools it uses. IBM is heading in the right direction by creating a common metadata model for the products in Information Server, Balkir said.

Information Server

The following tools are among the products in IBM's data management bundle:

INFORMATION ANALYZER:

Profiles source systems and monitors data rules to eliminate the risk of proliferating "bad" data.

DATASTAGE: Extract, load and transform data from multiple sources and target systems.

QUALITYSTAGE: Standardizes and matches information across mixed sets of data sources.

METADATA SERVER: Supports unified management, analysis and interchange of metadata through a shared repository.

Other vendors are also building integrated suites of data management tools, said Rob Karel, an analyst at Forrester Research Inc. He added that creating a business tool set doesn't preclude a best-of-breed approach by users.

But they don't get the same value from best-of-breed tools, Karel said, because the integration within products like Information Server "is embedded vs. plug-and-play."

Emc Says IBM Seeks Simplification, Not Lock-In

ANNEAL BROWN, general manager of information management at EMC, spoke with Computerworld last week after the company announced its Information Server bundle of tools. Excerpts from the interview follow:

Basically, when vendors create an integrated product suite, users are up to us to make an effort to create tools to do integration and to connect to various data sources. How do you respond to those kinds of comments about Information Server?

Server? We don't do anything unless customers ask for it. They asked for simplification. They were spending time integrating my product with your services and so forth, so that means you are going to be on top of the list of all the technology being used. In the future, if we are not, we don't have customers and we don't display best of breed.

We want to work with open standards.

If customers want to use a third-party product with Information Server, will it be possible to fully integrate them?

I should say... I don't play a model? I follow IBM's

open standards, if they don't follow standards, it will be hard to integrate. In fact, that's been an attempt in the software group since IBM, when

the software group was founded, that we will use by better association, not by controlling APIs.

Information Server that is with your services and so forth, so that means you are going to be on top of the list of all the technology being used. In the future, if we are not, we don't have customers and we don't display best of breed.

What kind of influence do data management and products such as Information Server have on Internet IT management model?

Information Server will focus some of the data governance that people have been struggling with. By doing just simple governance — by just getting an agreement on that before you start doing any — business integration product — it helps justify the data governance. And the more they focus on data governance, the better management of data they will have. Companies are starting to have chief data officers, or chief information officers — business focused and the information, not the traditional COO — whom job it is to get control of the data customer, price, orders, location.

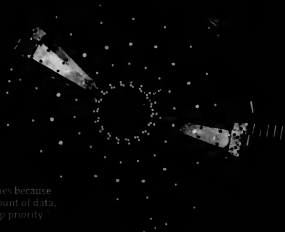
— PATRICK THIBODEAU



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BRIEFS

HP Extends Offer for Mercury Interactive

HPewlett-Packard Co. has extended its tender offer for all of Mercury Interactive Corp.'s common stock until midnight Eastern time on Friday. The previous deadline was Oct. 13. HP first agreed to acquire Mercury for \$4.5 billion in July in an effort to enhance its IT management software and services business. Adding Mercury would boost HP's annual software revenue to more than \$2 billion.

Microsoft Increases R&D Spending Plans

Microsoft Corp. CEO Steve Ballmer said the company plans to spend \$7.5 billion in research and development in fiscal 2007—more than analysts had predicted and \$1.5 billion more than Ballmer had previously projected. Much of the investment is expected to be used to build out Microsoft's online services, branded Windows Live, and to develop content for Microsoft's MSN Web site.

Intel Posts Decline in Q3 Sales, Profit

Following layoffs and executive shuffles, Intel Corp. reported a third-quarter profit of \$1.3 billion, which beat the estimates of financial analysts but was 36% below last year's results.

INTEL Q3 RESULTS (MILLIONS)		
REVENUE	Q3 07	Q3 06
	\$4.7B	\$5.1B
PROFIT	\$1.3B	\$2.0B

McAfee Buys Israeli Software Vendor

McAfee Inc. has acquired Outpost Labs, a Tel Aviv-based vendor of data loss prevention software, for \$20 million. Outpost's FlowControl software was designed to prevent the unauthorized transfer of data over a network by e-mail or network software and the copying of data to devices that attach to PCs, such as USB drives or printers. McAfee said it plans to ship its own version of FlowControl, called the McAfee Data Loss Prevention Solution, in the first quarter of 2007.

ON THE MARK



Corporate YouTube Stars Make Stars . . .

... out of IT departments. Corporate videos with high production values have been around forever. Making them useful and available to business units, partners and customers is a relatively recent phenomenon, says Ted Cocheu, CEO of Altus Learning Systems Inc. in

Los Gatos, Calif. To make them useful, he says, videos must be searchable by the spoken word. According to Sebastian Grady, Altus' chief



operating officer, the company's Rapid eLearning service records corporate presentations, manually indexes the spoken text, synchronizes it to video and PowerPoint images, and stores everything on a private, secure Web site. The site can be accessed only by authenticated users. Grady says Rapid eLearning also indexes company podcasts. By Q3 of next year, Cocheu says, Altus will add commentary and collaboration tools, such as video-content-related discussion forums. Although hardly a push to Hollywood, CEOs might consider directing a few programs to prepare end users for upcoming software rollouts. End users would be able to search the

instructional videos only for the parts that interest or involve them, saving them time and making you a star, at least in their eyes. There's a one-time, implementation-specific charge to set up a Rapid eLearning Web site. After that, it's \$2 per month per user.

Location-based services mixing up . . .

... data types to create new applications. Some mixes are easy, but some can be a "beast," says Marc Proleau, vice president of marketing at deCarta Inc. in San Jose. The easy stuff, such as blending a database of restaurants and hotels to a static map, is nice, but it's not where the action is, he says. The company's Drill Down Server (DDS) software can be used to create interactive routing maps that improve fleet lo-



HOT TECHNOLOGY TRENDS, NEW PRODUCT NEWS AND INDUSTRY BUZZ BY MARK HALL

gistics by giving drivers more precise routes that take into account real-time traffic, time-based turning restrictions, right-turn/left-turn driving patterns and other events that affect delivery performance and driving costs. Proleau notes, "Routing algorithms are a very complex beast," he says. This week, deCarta will release a beta version of its druggable maps feature using JavaScript. The DDS software is custom-priced.

AJAX vendor jacks up enterprise . . .

... apps like magic. Next month, Jackie Corp. in Chevy Chase, Md., will release a beta version of its Presto software, which can help IT create and manage interactive, Web-based applications. Chief Technology Officer John Crupi calls Presto "upcraze" because it sits above your service-oriented architecture middleware, authorizing AJAX-based apps to use available SOA services. Presto includes an AJAX Service Bus, so apps can subscribe to SOA-based events that are automatically sent to a browser. Likewise, an enterprise service director governs all of your available SOA services so IT can control access to those services. Crupi targets Q1 of 2007 for the final release of Presto. Pricing will be \$20,000 per CPU.

Leverage innate component . . .

... services for agent-free SOA management. Non-SOA tools often have SOA capabilities, so why not use them? That's the logic behind the release later this quarter of AmberPoint 5. According to Ed Hostet, vice president of marketing at AmberPoint Inc. in Oakland, Calif., the updated software will continue to use its agents on systems and

software to enforce runtime policies for SOA services. In the update, however, the governance engine in AmberPoint is no longer solely dependent on agents. Some hardware and software prod-

ucts, such as the enterprise service bus from Iona Technologies PLC in Dublin and switches and routers from P5 Networks Inc. in Seattle, include services that AmberPoint can now manage without adding agents. Pricing starts at \$35,000 per CPU. Agents, if you need them, are free.

Accelerate your real and virtual . . .

... local network traffic like a god. Zeus Technology Ltd. in Cambridge, England, plans to release next month a version of its Zeus Extensible Traffic Manager (ZXTM) to work as a virtual appliance with a VMware Inc. server. And, says CEO Paul Di Leo, Zeus is "in discussions with" XenSource Inc. in Palo Alto, Calif., to offer similar services for the Xen virtual environment. It already works with Solaris, Linux and FreeBSD.



Zeus says its ZXTM appliance boosts network traffic performance.

Di Leo claims that ZXTM inspects packets on your local network, understands the business logic they entail and routes them to the appropriate server. It also off-loads other servers from Secure Sockets Layer and XML processing for faster application response. ZXTM comes as either software or an appliance. Pricing starts at \$5,700.

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Windows Server 2003

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Reliability Is Key in the "World's Capital Market"

By MICHAEL BETTENDORF

LONDON, Oct. 2006—When an IT system must process 15 million real-time messages per day, with peaks at 2,000 messages per second, even one second of downtime counts. That's the pressure the London Stock Exchange faced when building Infolect, the Exchange's real-time stock-ticker information delivery system.

The solution had to have rock-solid reliability, nothing less. "Reliability is one of the key attributes of the Exchange in its technology systems. These systems have to work every day, 24/7, to make sure the markets are there," said CIO David Lester, who evaluated both Linux and Microsoft® Windows Server® 2003 for the Exchange's core technology systems. "We looked at a number of different platforms for our Technology Roadmap, and we lined up our business requirements with the capabilities of those platforms, and Windows Server was the clear choice."

In Lester's view, long-term reliability is a function of a solid relationship: "We wanted a deep partnership with an organization that could deliver the kind of mission-critical technology that we needed, and we felt Microsoft delivered just that."

For the full London Stock Exchange case study, plus other case studies and independent research findings on the reliability of Windows Server versus Linux, visit microsoft.com/getthefacts



BREAKING NEWS: London Stock Exchange Achieves Record Reliability

London Stock Exchange CIO David Lester (above) cites Windows Server as key to maintaining system reliability and performance.

LESTER SPEAKS OUT:

"We looked at a number of different platforms for our Technology Roadmap, and we lined up our business requirements with the capabilities of those platforms, and Windows Server was the clear choice."

—David Lester, CIO, London Stock Exchange

JOURNALISM BEAT: Continued growth for reliability-focused newspapers. A world-

BRIEFS

AT&T to Build Municipal Network

AT&T Inc., which has pushed for laws that would block certain kinds of municipal wireless networks, now plans to build one in Riverside, Calif. The city of 300,000 approved AT&T's plan to build a wireless network throughout developed areas. In addition to public Wi-Fi, AT&T will deliver wireless service to city employees and public safety agencies on a licensed frequency. The network is expected to be operational early next year.

Software Sales Boost IBM Results

IBM reported strong third-quarter financial results, spurred by growth in its software business and improved mainframe sales and OEM revenues.

	REVENUE	PROFIT
Q3 2000	\$21.9B	\$2.0B
Q3 1999	\$22.5B	\$2.5B

Level 3 Buys Service Firm

Level 3 Communications Inc. has agreed to acquire Broadview Corp., a provider of voice, data and media services, for \$1.4 billion in cash and stock. Level 3 said the acquisition will boost its recent efforts to target large businesses. Broadview sells fiber-network-based services to the wholesale and large-business markets. The companies expect the deal to close in the first quarter of 2007.

Shareholders OK IBM Purchase of ISS

IBM shareholders have approved the company's \$1.3 billion purchase of Internet Security Systems Inc. ISS offers programs to protect networks, servers, and desktop and laptop PCs by proactively blocking Web threats such as spam and viruses. The acquired firm will become part of IBM's Global Technology Services division. IBM said it will retain ISS's 1,300 employees.

Continued from page 1

E-voting

Electronic voting technology also has many backers, including top election officials. In several states who contend that the systems are secure and accurate.

In fact, Georgia Secretary of State Cathy Cox laid no blame on e-voting systems for her loss in the state's primary election in June. A spokesman said that Cox, whose office oversees elections, believes that the e-voting tally was accurate.

The nationwide dash to e-voting machines was prompted by passage of the federal Help America Vote Act in October 2002. Work on the legislation began shortly after the controversial 2000 election in Florida, which required several recounts before a victor was declared in the U.S. presidential race.

HAVA took effect on Jan. 1, 2006, and backers and critics agree that its e-voting machine provision faces its first major test in the Nov. 7 election, which is expected to include many close races.

Election Data Services Inc., a consulting firm in Washington, estimates that some 60 million voters — about 38% of registered voters nationwide — will be able to use e-voting machines to cast ballots on Nov. 7. In the 2004 election, such gear was available to about 29% of voters, the company said.

Early Glitches

In smaller tests of e-voting gear, glitches occurred in several primary elections nationwide this summer and fall, including contests in Maryland and Ohio. Many factors were cited for those problems, including a lack of training for election workers.

Some experts fear that if such problems continue next month, some results will be challenged in state and federal courts, which could lead to significantly increased voter skepticism of the e-voting process.

Some results have already

been challenged. A group of California residents unsuccessfully sued Mikel Haas, San Diego County's registrar of voters, after a tight special congressional election on June 6, because some election workers stored touch-screen machines in their homes, under seal, prior to the elections.

"With 99% of voters using DREs on Nov. 7, this election, more than any in the past, will give losing candidates and the public grounds for completely doubting the outcome," said Aviel Rubin, an electronic voting expert and a computer science professor at Johns

Hopkins University in Baltimore. "This has the potential to destroy the legitimacy of the entire process."

Rubin, also an elections judge in Baltimore County, Md., said he couldn't predict whether there will be e-voting problems next month. However, he noted, "at this point, if there's a software problem — or, worse, if the machines have been rigged — then there's nothing officials can do. They've dug themselves too deep a hole."

In an effort to avoid such problems, the Colo-

rado Democratic Party is urging voters to cast only absentee paper ballots because of potential problems with e-voting machines.

When he was working in Emery County, Utah, Funk brought in technical experts to hack the county's Diebold TSX touch-screen systems in an effort to determine what security measures were needed. Funk left his county elections post following the test, which demonstrated security flaws that he felt could affect the outcome of elections.

"There's a back door to these machines," Funk said. "There is such a myriad of things that can be done to the machines; officials won't know where to



E-voting Push Started With HAVA

THE PUSH for states to quickly adopt electronic voting systems can be traced to passage of the Help America Vote Act in October 2002.

The legislation was written as part of an effort to avoid problems with older voting systems, including the so-called dropped ballots that caused significant strife in Florida in particular and the U.S. in general following the contested 2000 presidential race.

The act left all 50 states scrambling to comply with its mandates, including a requirement that manual voting systems, such as lever-activated machines and punch cards, be replaced with electronic voting machines. It also stipulates that every voting precinct in the country must have a handicapped-accessible voting machine and that each state must create a comprehensive database of all voters.

The legislation also provided \$3 billion in funding to help state

and local elections agencies buy e-voting machines and train poll workers.

The law required that all states comply with the mandates by January 2006. At least one state, New York, was sued by the U.S. Department of Justice for noncompliance. New York election officials say they are still in the process of procuring e-voting machines to replace lever systems long used in the state.

Several state officials said that the law provides inadequate federal funding to implement widespread e-voting.

Joe Demma, chief of staff for Utah Lt. Gov. Gary Herbert, said his state considers the law an understated mandate. Demma called its passage a knee-jerk reaction by Congress to the problems in Florida in 2000. "We weren't at all happy about it, but we were elected to do something about complying with it," he said.

Demma noted that as Utah's population grows, the state will have to buy many new machines — fully without the help of federal funds. "It's going to be significant," he said. "We're disappointed if it's not funded. They put a bad line in place, and we're stuck with it."

Some experts believe the states have now been locked into proprietary technology that could require significant state and local funds for maintenance costs.

For all the faults of the old mechanical lever machines, maintenance was certainly easier, according to Maryland elections judge and e-voting critic Aviel Rubin. "On the plus, and they lasted for decades," said Rubin, also a computer science professor at Johns Hopkins University. "How many people have had the same computer for 10 years?"

— MARC L. SONNEN

begin to address them."

Electronic voting advocates, meanwhile, contend that most concerns about e-voting machines have been raised by zealots who are exaggerating the problems.

Top election officials in Washington, Texas, Alaska, Georgia and Utah maintain that their states have implemented adequate safeguards to ensure the accuracy and security of touch-screen systems.

For example, Texas has implemented a process to certify that the state's e-voting machines are "safe, secure, accurate, reliable and verifiable," said a spokesman for Secretary of State Roger Williams. "Our office is confident that the systems being used in November's election will meet each of these characteristics."

Michael Shamos, a computer science professor at Carnegie Mellon University in Pittsburgh and an e-voting consultant, asserted that fears about e-voting technology are unfounded.

Following next month's election, he predicted, "winners will be sure they won, regardless of what they said in the past about the machines. The losers will also contend that they won and that the machines stole the election from them. This doesn't change."

A DRE machine, properly used, can guide a user through the voting process using a rigid yes/no format, Shamos explained. The systems can assist disabled people, and they support multiple languages, he said.

Shamos did acknowledge that it generally takes three

States Create Processes to Ease E-voting Concerns

SEVERAL STATES have scrambled in recent months to establish processes to blunt potential problems with electronic voting machines before next month's election.

In Georgia, where there has been widespread use of e-voting machines for two years, training and security programs are credited with lessening complaints about e-voting to a minimum there, said a spokesman for Secretary of State Cathy Cox.

The state uses AccuVote TS touch-screen machines from Diebold Election Systems, he said.

The spokesman said much of the credit for the successful e-voting implementation goes to technical staffers from Kansas State University who have worked with the state since plans to implement e-voting systems were launched in 2002.

The state plans the university about \$500,000 annually to monitor elections and outbreaks with election workers, he said.

The state mandates that all election officials be trained by the Kansas State University staff in e-voting security procedures, such as

maintaining a chain of custody over machines, to prevent unauthorized tampering, he said.

Georgia has also joined Utah in prohibiting the storage of machines in private homes prior to elections. Some states, including California and Florida, allow workers to take some machines that will be used in widely scattered voting precincts. Officials in those states say that in large precincts, home storage provides for easier distribution than using a centralized facility.

In Utah, election officials have established a policy that requires county clerks to store the state's Diebold TSX touch-screen machines in secure facilities prior to elections, said Jon Dornme, chief of staff for Utah Lt. Gov. Gary Herbert, whose office oversees elections. Dornme noted that the storage sites are not even revealed to his officials.

He said that such policies are key to avoiding breaches of e-voting machines. In Utah, Dornme said, "you'd have to have a perfect breach of one machine, and you'd have to do a lot of work to change an election."

machines will include a so-called voter-verified paper trail, which has eased the fears of some critics, Reed said. Systems that produce paper records of votes will also be used in Ohio and California.

The paper trail allows voters to view a printed copy of their selections that is stored in or on the machine. Election workers can match the paper votes to the records in the machine's memory card to ensure that tabulations are accurate.

Critics of the paper-trail technology have noted that it can be difficult to load and operate and that it can compromise the anonymity of voters. Rubin also contended that hackers can rig a machine to print receipts that don't match the actual vote and that matching paper ballots to the database is a more difficult chore than advertised.

Federal legislation proposed by Rep. Rush Holt (D-N.J.) in February to mandate that each e-voting machine provide a paper trail has gained 200 co-



Utah, which started using the machines in 2000, also mandates audits and the censusing of votes after the election. "The state has done everything to be sure there is no messing with the stuff. If you do try to play that game, you're going to jail," said Dornme.

Jon Sanchez, elections supervisor in Leon County, Fla., suggested that statewide e-voting best practices could significantly limit potential problems. Such a statewide process has not been created in Florida, said Sanchez, and problems are likely to occur in his state next month.

"Every election supervisor is on their own," he said. "We are all har-

ing to deal with the transition to new equipment as best we can manage."

Sanchez created his own process for e-voting in general and security in particular for Leon County, which, like the rest of Florida, uses a blend of older and newer technologies. The county mostly uses Diebold AccuVote optical scan systems and relies on Diebold TSX touch-screen systems for handicapped people.

Douglas Jones, an e-voting expert and a professor in the University of Iowa's computer science department, urged poll workers to keep an eye out for potential technical problems.

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Election Day

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A spokesman for Diebold Election Systems Inc. in Allen, Texas, noted that critics of the technology "made the same dire predictions before the last presidential election, yet across the country, the touch-screen systems performed extremely well. They were actually more accurate than older forms of voting and much more accessible to people with special needs."

Kay Brown, spokeswoman for the Alaska Democratic Party, which has charged that voting records from 2004 election in the state were accessed and altered after the election, contended that there should be a national standard for e-voting systems.

"I think that we need major reforms," Brown said. "We need to get away from proprietary software. Everything about the election should be open to public inspection and transparent." ■

E-voting

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AT&T to Build Municipal Network

AT&T Inc., which has pushed for laws that would block certain kinds of municipal wireless networks, now plans to build one in Riverside, Calif. The city of 300,000 approved AT&T's plan to build a wireless network throughout developed areas. In addition to public Wi-Fi, AT&T will deliver wireless service to city employees and public safety agencies on a licensed frequency. The network is expected to be operational early next year.

Software Sales Boost IBM Results

IBM reported strong third-quarter financial results, spurred by growth in its software business and improved mainframe sales and OEM revenue.

ONE OF THE NUMBERS				PROFIT
Q3 06	Q3 05	Q3 06	Q3 05	\$2B
Q3 06	Q3 05	Q3 06	Q3 05	\$1.8B

Level 3 Buys Services Firm

Level 3 Communications Inc. has agreed to acquire Broadwing Corp., a provider of voice, data and media services, for \$1.4 billion in cash and stock. Level 3 said the acquisition will boost its recent efforts to target large businesses. Broadwing sells fiber-network-based services to the wholesale and larger business markets. The companies expect the deal to close in the first quarter of 2007.

Shareholders OK IBM Purchase of ISS

IBM shareholders have approved the company's \$1.3 billion purchase of Internet Security Systems Inc. ISS offers programs to protect networks, servers, and desktop and laptop PCs by proactively blocking Web threats such as spam and viruses. The acquired firm will become part of IBM's Global Technology Services division. IBM said it will retain ISS's 1,300 employees.

Continued from page 1

E-voting

Electronic voting technology also has many backers, including top election officials in several states who contend that the systems are secure and accurate.

In fact, Georgia Secretary of State L.obby Leno had no blame on e-voting systems for her loss in the state's primary election in June. A spokesman said that Leno, whose office oversees elections, believes that the e-voting tally was accurate.

The nationwide dash to e-voting machines was prompted by passage of the federal Help America Vote Act in October 2002. Work on the legislation began shortly after the controversial 2000 election in Florida, which required several recounts before a victor was declared in the U.S. presidential race.

HAVA took effect on Jan. 1, 2006, and backers and critics agree that its e-voting machine provision faces its first major test in the Nov. 7 election, which is expected to include many close races.

Electron Data Services Inc., a consulting firm in Washington, estimates that some 66 million voters — about 38% of registered voters nationwide — will be able to use e-voting machines to cast ballots on Nov. 7. In the 2004 election, such gear was available to about 20% of voters, the company said.

Early Glitches

In smaller tests of e-voting gear, glitches have occurred in several primary elections nationwide this summer and fall, including contests in Maryland and Ohio. Many factors were cited for those problems, including a lack of training for election workers.

Some experts fear that if such problems continue next month, some results will be challenged in state and federal courts, which could lead to significantly increased voter skepticism of the e-voting process.

Some results have already



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been challenged. A group of California residents unsuccessfully sued Mike Hias, San Diego County's registrar of voters, after a tight special congressional election on June 6, because some election workers stored touch-screen machines in their homes, under seal, prior to the elections.

"With 39% of voters using DREs on Nov. 7, this election more than any in the past, will give living candidates and the public grounds for completely doubting the outcome," said Aviel Rubin, an electronic voting expert and a computer science professor at Johns

Hopkins University in Baltimore. "This has the potential to destroy the legitimacy of the entire process."

Rubin, also an elections judge in Baltimore County, Md., said he couldn't predict whether there will be e-voting problems next month. However, he noted, "at this point, if there's a software problem — or, worse, if the machines have been rigged — then there's nothing officials can do. They've dug themselves too deep a hole."

In an effort to avoid such problems, the Colo-

rad and local elections agencies buy e-voting machines and train poll workers.

The law required that all states comply with the mandates by January 2006. At least one state, New York, was sued by the U.S. Department of Justice for noncompliance. New York election officials say they are still in the process of procuring e-voting machines to replace lever systems long used in the state.

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Demma noted that as Utah's population grows, the state will have to buy many new machines — likely without the help of federal funds. "It's going to be significant," he said. "We've disappointed it's not funded. They put a bad law in place, and we're stuck with it."

radio Democratic Party is urging voters to cast only absentee paper ballots because of potential problems with e-voting machines.

When he was working in Emery County, Utah, Funk brought in technical experts to hack the county's Diebold FES touch-screen system in an effort to determine what security measures were needed. Funk left his county elections post following the test, which demonstrated security flaws that he felt could affect the outcome of elections.

"There is a back door to these machines," Funk said. "There is such a myriad of things that can be done to the machines; officials won't know where to



Some states use DREs, such as this one, were intended to simplify voting.

Some experts believe the states have now been locked into proprietary technology that could require significant state and local funds for maintenance tasks.

For all the faults of the old mechanical lever machines, maintenance was certainly cheap, according to Maryland elections judge and e-voting critic Aviel Rubin. "On the gears, and they lasted for decades," said Rubin, also a computer science professor at Johns Hopkins University. "How many people have had the same computer for 10 years?"

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The state uses AccuVote TSX touch-screen machines from Diebold Election Systems, he said.

The spokesman said much of the credit for the successful e-voting implementation goes to technical staffers from Tennessee State University who have worked with the state since plans to implement e-voting systems were launched in 2002. The state uses the university about \$500,000 annually to monitor elections and collaborate with election workers, he said.

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elections to adequately train poll workers in the use of e-voting machines and familiarize them with the e-voting process. Thus, he said, mistakes in setting up machines, booting them up and printing reports are likely in the coming election. "Nothing fatal, but plenty for people to yell about," Shamos said.

Sam Reed, secretary of state for the state of Washington and past president of the National Association of Secretaries of State, said some problems are likely occurring simply because new systems are being used. "We know that at any time you convert to a new system, snafus are bound to [happen]," he said.

Reed also said he expects that the vendors of DRE machines "will be spread awfully thin" trying to provide training and support services throughout the country.

In next month's election, e-voting machines will be used in five Washington counties, he said. In those counties, the

machines will include a so-called voter-verified paper trail, which has eased the fears of some critics. Reed said. Systems that produce paper records of votes will also be used in Ohio and California.

The paper trail allows voters to view a printed copy of their selections that is stored in or on the machine. Election workers can match the paper votes to the records in the machine's memory card to ensure that tabulations are accurate.

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Federal legislation proposed by Rep. Rush Holt (D-N.J.) in February to mandate that each ballot touch-screen voting machine provide a paper trail has gained 200 co-

Election Day

LAST NIGHT, WORKING

- Expected that some system or process will break down.
- Double-check all results to make sure the number of voter matches the number of ballots.
- Create a paper record of all votes to be stored locally before transmitting results to the state.
- Check the paper record against the official results that are published by state or local agencies.
- Randomly audit machine-counted paper ballots.

sponsors but has not been put to a vote in Congress.

A spokesman for Election Systems & Software Inc., an Omaha-based manufacturer of optical scan and DRE systems, said recent criticism of the technology "ignores the fact [that] touch-screen voting has worked over the past several

years. The systems are tested very rigorously to ensure that they function as intended."

A spokesman for Diebold Election Systems Inc. in Allen, Texas, noted that critics of the technology "made the same dire predictions before the last presidential election, yet across the country, the touch-screen systems performed extremely well. They were actually more accurate than other forms of voting and much more accessible to people with special needs."

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"I think that we need major reforms," Brown said. "We need to get away from proprietary software. Everything about the election should be open to public inspection and transparent." ■

E-voting

For the Nov. 7 national election

38%

of the U.S. voters (90 million) will use touch-screen e-voting machines.

50%

(64 million) of voters will use optical scan gear.

7%

(22 million) will be using punch-card and lever machines.



YOU ALWAYS HAD
THE BRAINS.

Dual-Core is a new technology designed to improve performance of multithreaded software products and hardware-based multiprocessing operating systems and may require appropriate operating system software to full benefit. Check with software provider to determine suitability. Not all customers or software applications will necessarily benefit from use of this technology. Requires a separately purchased 64-bit operating system and 64-bit software products to take advantage of the 64-bit processing capabilities of



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Oracle Tops Century Mark With Latest Patch Release

Vendor issues 101 software fixes as part of quarterly update; more on the way

BY JACQUELINE YULIYAN

ORACLE CORP. last week released a total of 101 software patches to fix security vulnerabilities across its entire product line. It described 45 of the patches as being aimed at flaws that could be remotely exploited without requiring any authentication.

The company said an unspecified number of additional patches that are still in the works will be issued this week. Among Oracle's latest quarterly patch releases were 63 fixes for its databases and supporting products, 14 for its application server software, 13 for its E-Business Suite applications and nine for the PeopleSoft and J.D. Edwards applications that the company acquired when it bought PeopleSoft Inc. early last year. Oracle moved to the quar-

terly security-fix schedule in November 2004 in response to user demands for a more streamlined patching process. Since then, the vendor has come "a long way" in improving its procedures, said Rich Niemic, a former president of the International Oracle Users Group and CEO of TUSC, an Oracle-oriented consulting firm in Lombard, Ill.

Feedback Considered

For example, increased documentation that Oracle started making available with the latest batch of fixes—including a list of the remotely exploitable flaws—makes it easier for IT managers to identify relevant patches and calculate the resources required to install them, Niemic said. He added that Oracle officials often solicit feedback from users on how the company is

doing on its patches.

But Amichal Shulman, chief technology officer at security software vendor Imperva Inc. in Foster City, Calif., said one concern for users is that at least five of the 22 database-specific flaws addressed by last week's updates appear to be similar to vulnerabilities that Oracle supposedly had patched previously. "There is something alarming about this trend of the same vulnerability repeating itself in the same database package," Shulman said.

David Litchfield, managing director of Next Generation Security Software Ltd. in Surrey, England, said that in principle, Oracle's decision to move to a quarterly schedule on patches was sound. But "in practice, all the benefits that regular patch releases offer are negated because they fail to keep to their committed schedule," he added.

For instance, the latest round of patches didn't include fixes for several database ver-

sions in which flaws have been discovered, Litchfield said. He also claimed that Oracle has often re-released patches because of problems with them. In fact, the only time Oracle has had all of its planned fixes ready on the appointed day or didn't subsequently re-release any of them was with the updates it put out in July, according to Litchfield. "Getting it right one out of eight times is abysmal," he said.

In a posting on its security blog, Oracle said that more than one-third of the vulnerabilities patched last week "are in an optional product and do not affect most customers."

Responding to the comments of Shulman and Litchfield, an Oracle spokeswoman

Patch Parameters

said that since most of the company's patches are cumulative, they contain security fixes that may have been included in previous patches.

She added that Oracle sometimes delays patch releases because it needs more time to test or modify a fix "so it meets our quality exit criteria." Patches that were missing from last week's release will be made available by tomorrow, the spokeswoman said. ■

Users Look for Details on Next Oracle DB Release

AT ITS ANNUAL OpenWorld

conference in San Francisco this week, Oracle is expected to divulge details on the enhancements it plans to make in the next version of its flagship database, which began initial beta testing last month.

Oracle last week declined to comment about any new products. But users and analysts said they expect the next release to include enhancements to the database's grid computing, clustering and XML capabilities, as well as new security features and increased automation to ease database administration tasks for smaller companies.

Oracle released the first beta of the software last month, said Art Kaplan, president of the International Oracle Users Group. For now, the planned upgrade is mostly being referred to by users as 11g, hinting at the naming convention Oracle used when it released Version 10g of the database in 2004.

Kaplan, a senior consultant at Deloitte Corp. in Charlottesville, Va., said he has seen the 11g

beta release but he declined to disclose specific information about its contents. But he did say the beta includes many features related to Oracle's Real Application Clusters technology, its grid management capabilities, its handling of XML, service-oriented architectures, security and its PL/SQL development language. "There's a lot of exciting functionality," Kaplan said.

Donald Burleson, an Oracle consultant and author in Walnut, N.C., was less wowed than Kaplan, describing 11g as "a minor move up" with its most notable features likely to be in the area of simplifying database administration. "I'm trying to make Oracle do simple a 12-year-old could handle it," he said.

Anthony Shulman, chief technology officer at security software vendor Imperva Inc., said Oracle needs to show up "often and" with less time in 11g between beta versions and is responsible for many of the security flaws discovered in Oracle's databases this year.

—ERIC LIA

EMC Adds Dual-Protocol Support to Clarion

BY SHARON FISHER

EMC Corp. today is set to unveil two upgraded Clarion CX3 midrange storage arrays that support both Fibre Channel and iSCSI protocols.

The company will also bring out new monitoring software for the Clarion arrays and new models in its Symmetrix and Celeria lines.

Tom Henson, infrastructure manager at Molex Inc. in Chicago, said the maker of electrical connectors beta-tested the upgraded Clarion CX3-40 Fibre Channel/iSCSI system and found it easy to use. But he noted that his company has no plans to purchase one of the arrays at this point.

Molex currently runs an EMC Fibre Channel array at its headquarters and EMC

Clarion CX3300 iSCSI storage systems at two remote offices.

Henson said that the company will further evaluate the new Clarion models for possible purchase when the Clarion CX7000 Fibre Channel system used at its headquarters reaches the end of its life.

EMC doesn't plan to add iSCSI support to the Clarion CX3-40, the other member of the CX3 family, said Barbara Robidoux, the vendor's vice president of storage product marketing.

John Hegner, vice president of technology services at Liberty Medical Supply Inc. in Fort Saint Lae, Fla., said dual-protocol arrays are a natural progression for EMC.

Nonetheless, Hegner said his organization has no plans

to expand beyond its EMC Fibre Channel systems at this point, though Liberty Medical will consider the new offering.

The new systems are available now. Upgrades from the current models will be available in 90 days, according to Robidoux. EMC's new Navisphere Quality of Service Manager software runs on all of the Clarion systems, and it can be used to monitor and optimize their performance.

EMC also announced an entry-level version of its Symmetrix high-end storage array, five new models in its Celeria line of network-attached storage systems and three disk libraries that use the company's UltraScale 4Gbit/sec technology. ■

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An approach in which software unifies your people, processes and technology to increase efficiency and optimization. Only one global software company can do that. CA, formerly known as Computer Associates, has focused solely on IT management software for over 30 years.

The technology vision that makes this promise real is called Enterprise IT Management, or EITM. At its heart is the CA Integration Platform - a common foundation of shared services that gives you real-time, dynamic control and flexibility. Its greatest benefit? CA software solutions come to you already integrated, and able to integrate with your existing technology to optimize your entire environment.

Ultimately, well-managed IT gives you the visibility and control you need to manage risk, manage costs, improve service and align IT investments. To learn more about how CA and our wide array of partners can help you unify and simplify your IT management, visit ca.com/unify.



GLOBAL DISPATCHES

An International IT News Digest

Vista to Ship on Time in Europe, Microsoft Says

BRUSSELS

MICROSOFT CORP. has agreed to make changes to Windows Vista to satisfy European regulators and said it will ship the new operating system on schedule.

The company had warned last summer in a filing with the U.S. Securities and Exchange Commission that "uncertainties" surrounding regulatory battles in Europe "could delay release dates for Windows" there. Microsoft CEO Steve Ballmer confirmed in a mid-October conversation with European Commission Competition Commissioner Neelie Kroes that Vista will ship on schedule. It will go on sale to large computer manufacturers next month and to consumers in January, Microsoft said.

In a statement, Microsoft said it has made changes to Vista that address the concerns of the European Commission. "We are committed to adhering to local law in every region," Ballmer said.

In September, Microsoft had accused the EC of not providing clear guidance on whether Vista would pass muster under European antitrust law.

■ PETER SAYER, ICG NEWS SERVICE

Siemens Overhauls IT Service Operation

MUNICH

SIEMENS AG has decided to keep but completely overhaul its money-losing IT services and software operations.

Siemens said a new entity, Siemens IT Solutions and Services, will replace the current Siemens Business Services (SBS) operation in January.

The group will oversee all of the company's worldwide IT services and software activities, including four software development operations: Program and System Engineering, Siemens Information Systems, Development Information and Projects, and the Business Innovation Center.

Christoph Kollatz, group president of SBS, will be president of the new venture and will have a mandate to slash

costs by €1.5 billion (\$1.9 billion U.S.) by mid-2007.

The unit is expected to generate annual sales of around €3 billion (\$6.3 billion U.S.) and employ about 43,000 workers.

■ JOHN BLAU, ICG NEWS SERVICE

EU Launches Telecom Infringement Cases

BRUSSELS

THE EUROPEAN COMMISSION this month initiated nine new infringement cases against European Union governments for failing to honor telecommunications laws.

The EC also opened second-stage infringement proceedings against eight countries and said that ongoing cases have been closed.

Most of the cases were filed against countries that had failed to complete work on assessing the status of competition in their national markets and did not have telecommunications infrastructures capable of providing caller location data to emergency personnel.

"The commission remains vigilant in ensuring that the EU's regulatory framework for electronic communications is correctly implemented," said Viviane Reding, commissioner of the Information Society and Media Directorate General. She added that "the single European emergency number 112 needs to be urgently addressed in all member states."

■ PAUL MELLER, ICG NEWS SERVICE

Wipro Chief Downplays Indian Staff Shortages

BANGALORE, INDIA

WIPRO LTD. Chairman Azim Premji last week downplayed the impact of technical staff shortages in India, saying they won't hold back the country's outsourcing industry.

Indian outsourceers are overcoming the shortage by hiring science graduates and retraining them for engineering work, Premji said.

Last December, McKinsey & Co. in New York and the National Association of Software and Service Compa-

nies in New Delhi forecast a shortage of 500,000 engineering workers for India's outsourcing industry by 2010. Premji contends that much of the outsourcing work currently done by engineers is suited to science graduates.

Wipro and competitors Infosys Technologies Ltd. in Bangalore and Tata Consultancy Services Ltd. in Mumbai are also expanding in China and Eastern Europe to supplement their Indian staffs.

The shortages emerged as multinational services companies such as Electronic Data Systems Corp., Accenture Ltd. and IBM set up operations in India to take advantage of low labor costs.

As jobs opened up at those companies, Bangalore-based Wipro's attrition rate started to grow, reaching 15.9% in the quarter that ended Sept. 30. Sudip Banerjee, president for enterprise solutions in Wipro's technologies division, said that the attrition is mostly in entry level jobs and that it doesn't concern the company.

■ JOHN RIBEIRO, ICG NEWS SERVICE

EU Parliament to Fight Airline Passenger Pact

BRUSSELS

SOME MEMBERS of the European Parliament are gearing up for a fight over data privacy following a temporary agreement by EU justice ministers to provide airline passenger data to U.S. authorities.

Many members of parliament criticizing the deal signed earlier this month, which grants U.S. government agencies greater access to passenger records than had in an earlier agreement that was deemed illegal by the European Court of Justice in May.

"The European Union has completely capitulated to U.S. demands on this issue," said European Parliament member Sylvia Kaufmann, who is part of the European United Left/Nordic Green Left alliance.

"The fact that the CIA will have access to passenger data is the real scandal, especially when one considers that the right of redress held by U.S. citizens is not extended to EU citizens," she added.

The Court of Justice ruled in May that the old agreement would become void at the end of September. The new temporary agreement is valid until July 2007 and will have to be replaced by a longer-term agreement.

■ PAUL MELLER, ICG NEWS SERVICE

Compiled by Mike Bucken.

Briefly Noted

In Tokyo has sold its Packard Bell unit to a company controlled by John Hui, the former owner of eMachines Inc., for an undisclosed sum. Packard Bell, which sells PCs and other consumer electronics products in Europe, the Middle East, Africa and South America, had revenues of €1.3 billion (\$1.6 billion U.S.) in the year that ended in March 2006, NEC said.

■ MARTIN WILLIAMS, ICG NEWS SERVICE

Nokia Corp. completed its acquisition of Gaisa AG, a navigation software maker, earlier this month, just days after licensing hundreds of navigation patents from Trimble Navigation Ltd. Gaisa will become part of Nokia's multimedia business group and will operate based in Berlin, Germany. In part of Exo, Finland-based Nokia's strategy to control new technologies that can be integrated into mobile phones.

■ MANDY SCHWING, ICG NEWS SERVICE

Microsoft's Project Phoenix said its U.S. unit, Mitsubishi Electric & Electronics U.S.A. Inc. in Cypress, Calif., has received a subpoena from the U.S. Department of Justice to produce information regarding sales of static RAM chips. The Tokyo-based parent company acknowledged receipt of the subpoena but declined further comment last week.

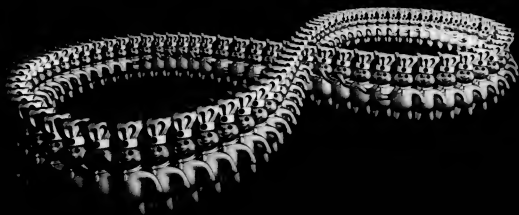
■ MARTIN WILLIAMS, ICG NEWS SERVICE

and Transpac PC Ltd. have built computers that use Taiwan-based Via Technologies Inc.'s C-70 processor, which promises to reduce the environmental impact of PCs. Engineers, England-based Eveready's Greater Camden 3 PC has a C-70 processor and 256MB of memory. Details of Carrington, England-based Transpac's C-70 system weren't available at press time.

■ SUMNER FLEMING, ICG NEWS SERVICE

has opened an operation in New Delhi, continuing an effort to expand around the world. Infos last week named Vishu Bhargava director of business development and global alliances. Bhargava is responsible for increasing Infos' business in India.

■ CHINA MARTENS, ICG NEWS SERVICE



Electric Grid Operator Consolidates BI Tools

Replaces Business Objects, Microsoft reporting tools with Actuate products

BY MATTHEW HUNTERSTEIN
THE COMPANY that coordinates the buying and selling of wholesale electricity for 80% of California's intelligence tools as part of a major corporate technology upgrade.

Over the past year, the California Independent System Operator (ISO) has been replacing Excel spreadsheets and reporting tools from Business Objects SA and Microsoft Corp. with query, reporting and analysis tools from San Francisco-based Actuate Corp., said Steve Berberich, CIO and vice president of technology at the electric grid operator.

The BI initiative is running in tandem with a project to upgrade the specialized core IT systems that provide the ISO's internal users with electricity demand data, prices and the ability to settle transactions, Berberich said.

The project is slated to be completed in November 2007. The ISO manages the flow of electricity along California's wholesale power grid, coordinating 40,000 transactions every hour between buyers and sellers. The not-for-profit electric grid operator's IT systems are also used to manage demand forecasts, track prices and settle transactions.

"The data that we provide and how we provide it actually facilitates the market," Berberich said. "We're very demanding in the way we use. Because of the role we play, it was important to have a bullet-proof product and one... we knew could integrate with our new applications."

The ISO will use the Actuate tools to marry historical data with real-time informa-

tion so users can have online access to reports containing scheduled energy loads and forecasts. As a result, energy companies will be able to more easily access online information to better plan for production and establish pricing, Berberich said.

He said the upgrade is an opportunity for the grid operator to eliminate some of the costs associated with maintaining separate BI tools. He added, though, that it would be

difficult to estimate the exact cost savings associated with standardizing on BI tools.

"We are creating value on a number of fronts," Berberich said. "First, we have reduced support costs because we don't have so many disparate reporting tools. Training costs are reduced because we don't have to train on a collection of tools."

Berberich also said workers will be more efficient because they won't have to use separate tools for different tasks.

While he acknowledged that it's generally difficult to get BI users to change tools, the



The California ISO, which manages the flow of electricity along the state's wholesale power grid, is upgrading its BI and core IT systems.

ISO has so far been successful in its effort by clearly laying out the advantages of the new products. Officials have worked to create a "bit of excitement around the new prod-

uct" that may make it more attractive to users than the tools now in use, Berberich said.

"You have to be firm in your position on the standard," he added. "What is important to us is that we focus on providing information. To the extent we have a tool that can change data into information... that is very useful."

Bill Hostmann, an analyst at Gartner Inc., said companies must find ways to reduce costs when building an infrastructure that can be used to link historical and real-time data.

A BI infrastructure for analyzing real-time data is much more expensive and complex than those focused only on historical data, Hostmann said. Eliminating the overlap or redundant features found in multiple tools can help offset those costs, he said. □

New CEO Outlines Plans for Struggling Extreme

BY MATT HANSEN

Former Sun Microsystems Inc. executive Mark Campa was named president and CEO of Extreme Networks Inc. on Aug. 30. Since then, the company has received notice that it may be delisted from the Nasdaq Stock Market for delaying its year-end financial filings, and it has appointed a committee to investigate its stock-option grant practices. In an interview with Computerworld, Campa talked about those issues, the company's declining revenue and the growing threat of Cisco Systems Inc., which dominates the switching and routing markets for large companies and telecommunications service providers.

What are customers asking about Extreme's financial performance? Customers want a really good high-quality product at a reasonable price. They also want a sales force and a service organization that's there when they need them. The third thing they [want] is a company that will be around for a long

time that they can count on to do business with. I think we've been able to convince customers we have all three.

How are customers reacting to the possible Nasdaq delisting, and to an inquiry into Extreme's stock-option practices? We

have talked to lots of customers. First, we've got lots of company. Hundreds of technology companies are facing investigations into stock-options practices, and there will be lots more. [The investigation] is just a thing. It doesn't affect the equipment; it doesn't affect anything, really, in the company. It's not clear there's going to be a restatement of the annual report. There is only a delay in the filing of the Extreme 10-K.

I spend very little time worrying about it. We'll see what the outcome is, if any. That's what we've been telling customers, and that's what we've been telling the sales force.

How important are enterprise customers to Extreme, compared

with telecom carriers? Most of our revenue comes from the enterprise space, so it is a hugely important customer. The carriers have leading-edge requirements. The carrier innovations carry over to the enterprise world. Extreme has a fraction of its business from the carrier space, but we carry that over. We're good at bringing it to the enterprise, with the right cost structure.

What is Extreme's technology direction? Our technology direction is pretty simple. You have got to understand the network very well. That means being able to get at the heart of those IP packets and understand the flow that's coming to them. That requires pretty sophisticated hardware and software, which the company is built upon. Then it requires building products able to exploit that and knowing what markets are receptive to those features.

Am I correct in concluding that Extreme won't be making any major strategic changes soon? At a strategic level, I don't

think a lot will change. The next year or so for the company is all about operation and focus and making sure people are in the right segment and making sure all the technology in the products is transferred into the knowledge base of the sales force. It's all about partner organizations, solutions and all of that.

Can you assess the competitive landscape, including Cisco? We all operate in the shadow of a Cisco. It means you have to differentiate and be nimble. Cisco may be large, but they have lots of different product lines that may be incompatible with one another. We've built our company around a single system that's open. We have a very sophisticated XML interface and a set of APIs that make it very easy for a partner like Araya to closely build in an application environment. That's the key when you're a \$400 million company like us. The trick is to apply what you are really good at into markets where you can make a difference, and get there before Cisco. □

Q&A

**APPLICATIONS
UNTESTED
CUSTOMERS**

HATE THAT

MERCURY

Out of Control

THIRTIETH a lot of buzz about Hewlett-Packard being in damage-control mode as it struggles to cope with the fallout from the boardroom leak investigation fiasco. While the buzz is getting a little tiresome, it begs a nagging question that I can't seem to shake: Why is HP so stupefyingly bad at controlling the damage?

Here we have a company that vespers to retain (or regain) its users' confidence following one of the high-st-profile corporate ethics breaches in recent memory. It was essential to fill the newly vacated chief ethics officer post, and quickly, so that some one would be in place to ensure that HP adheres to its standards of business conduct. But in a demonstration of astonishingly poor judgment, the post was filled by one of HP's top Mark Hurd's old cronies from NCR.

It has been almost two weeks since HP announced that Jon Hook, a former general counsel at NCR, the company Hurd left to join HP in 2001, was being tapped for the chief ethics officer post. Yet HP's choice seems to remain a mystery. Of all the candidates who would be eminently qualified to assume a role that would clearly require objectivity, impartiality and a degree of distance from the individuals whose names are inextricably linked to the scandal, why on earth select Hook?

Obviously, Mark wanted to make a little quickie. "HP spokeswoman Emma Wolschen told Reuters, according to a report by that news organization: 'The fact that they had worked together for more than 10 years generally shortened the hiring process.'"

Yes, I'm sure it did. When North Korea's Kim Il Sung appointed his son, Kim Jong Il, to take over for him that greatly shortened the transfer of power process. I suspect they had his merits, but let's not elevate it to a status it doesn't deserve.

It seems incomprehensible that no



DON TENNANT is editor in chief of *Computerworld*. Contact him at dtennant@computerworld.com.

one at HP could foresee that appointing a former Hurd colleague to the ethics oversight position might be perceived as a shameless attempt by Hurd to keep from being further sullied by the scandal. But there's another dimension to all this that's even more baffling.

Nearly two weeks before HP announced Hook's appointment, BusinessWeek ran a story that recounted internal investigations at NCR, including probes of leaks of sensitive information on Yahoo message boards.

"In each investigation, Hook... relied on his former chief counsel, Jon Hook, to run the show," BusinessWeek reported. "Hook... vividly recalls Hurd's

peering over his rimless reading glasses after one Yahoo leak and telling him 'We can't have this, so you go out and do what you have to do. Just make sure everything is legal and above board.'"

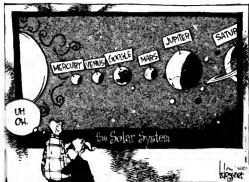
So Hook wasn't just any former colleague. He reportedly was Hurd's go-to guy when the boss wanted internal leaks investigated at NCR.

Think about that. Hurd is CEO of a company that's embroiled in a leak-probe scandal that has resulted in the criminal indictments of its former chairman, Patricia Dunn, and its former chief ethics officer, Ken Hunsaker. Hurd himself has been called to testify before Congress about his role in the scandal, which is still under scrutiny by legal authorities.

Now, not only has Hurd taken over as chairman, but he has also appointed an old leak investigation cohort to replace Hunsaker. No, there's nothing inherently wrong or unethical about that. And there's absolutely no reason to believe Hook ever conducted any investigation under any, but the most critical of circumstances.

But Hurd's appointment of Hook still smacks of cronyism and self-preservation. And that just creates more damage for HP to have to control. ■

Don Tennant



Be an FDR of IT Leadership

A WEEK after his election as president in 1932, Franklin Delano Roosevelt gave an interview to *The New York Times*. In it, he reviewed the work of great presidents and concluded that they were all "leaders of thought at times when certain historic ideas in the life of the nation had to be clarified." (Currently executives' and society's ideas about the role, purpose, commitments and responsibilities of IT need to be clarified. And we in IT must be the thought leaders who step up and provide the necessary clarity.)

Here are three steps to prepare you to do this.

Step 1: Celebrate new thoughts and new thinkers.

We work in the fastest-changing sector of the economy, yet many IT executives somehow come across to peers as stale, tired, intellectually bankrupt and operationally out of gas. Ask someone in IT "What's new?" and he most likely won't have a very exciting response. How can this be?

Another U.S. president, Grover Cleveland, built his political base by holding forth in saloons, speaking clearly in simple words to immigrants. He became a pipeline to the knowledge that they wanted and an aid to their Americanization. Truth be told, we are all immigrants in a new land—the land of digital. We in IT can be a pipeline of knowledge and ideas to executives coming to grips with the wholesale digitalization going on in the economy today.

But if most ideas come into your company from the outside, you need to do more creative thinking of your own. Be selective about ideas, but don't be afraid to let in big new ones. Remem-



THEODORE A. HART is a longtime industry observer, management consultant and commentator. Contact him at thehart@comcast.net.

DON TENNANT

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Yes, I'm sure it did. When North Korea's Kim Il Sung appointed his son, Kim Jong Il, to take over for him, that greatly shortened the transfer-of-power process. Expediency has its merits, but let's not elevate it to a status it doesn't deserve.

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THORNTON A. MAY

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But if most ideas come into your company from the outside, you need to do more creative thinking of your own. Be selective about ideas, but don't be afraid to let in big new ones. Remem-

ber that there is such a thing as new IT knowledge. Executives are searching for a road map. Let's give it to them.

Step 2: Weed out old thoughts and old thinkers.

A difficult but necessary step on the IT professional's path to true thought leadership is to inventory all strongly held beliefs — the truths about IT that are held to be self-evident — and then assess candidly whether they are indeed self-evident. Woodrow Wilson in 1912 wrote, "We are in the presence of a new organization of society.... The old formulas do not fit the present problems; they read like documents taken out of a forgotten age." We need to jettison old formulas that no longer serve, or reconfigure or remove the people who cling to them.

Every vertical market needs a mental spring cleaning from time to time. I wrote last month about the need for IT folks in health care to get out and mingle with non-health-care professionals ("Where Are All the Health Care IT Pros?" Sept. 25). Meanwhile, in too many government environments, public servants continue to perpetuate an assembly-line mode of operation in a build-to-suit world.

Step 3: Have a compelling endpoint and work toward it.

You need to make the invisible that which does not yet exist visible. Great organizations are bringing those whose impulse is toward visionary change and those who are interested in making things work into close contact with one another.

Herbert Hoover, one of the brightest and best-intentioned people ever to go into public service, was described by a friend, the eminent Kansas journalist William Allen White, as "the greatest innocent bystander in history." Don't be a Hoover. Be an FDR! *

JOHN D. HALAMKA

In the Data Center, the Heat Is On

I RECENTLY BEGAN a project to consolidate two data centers. Moore's Law has been kind, enabling Harvard Medical School to do more work with less data-center real estate. We had

enough rack space, network drops and power connections, so the consolidation seemed like a good way to reduce operating costs.

All looked good until we examined the power and cooling requirements of our computing clusters and new racks of blade servers. For a mere \$400,000, we could run new power wiring from electrical crypts to the data center. But the backup generators wouldn't be able to sustain the consolidated data center in a total power loss situation, so we would need to install a new \$1 million backup generator. Problem solved?

Not quite. The heat generated by all this power consumption would rapidly exhaust the cooling system, driving temperatures up 10 degrees. We investigated floor-tile-mounted cooling, portable cooling units and even rack-mounted cooling systems. They all take up space, consume power and add weight. In the end, we found that the new data center's cost per square foot would exceed the cost of operating two less densely packed data centers. We looked at commercial data-hosting options and ran into the same issue. Power limits per rack meant half-full racks and twice as much square footage to lease, increas-



ing our operating costs.

At my *CareGroup* data center, we recently completed a long-term planning exercise for our unused square footage. Over the past few years, we've met increasing customer demand by adding servers, and power has not been a limiting factor. However, as we retire mainframe, mini- and RISC computing technologies and replace them with Intel- or AMD-based blades, the heat generated will exceed our cooling capacity long before real estate and power have been exhausted.

The recent rise in the cost of energy has also demonstrated that unchecked growth in the

number of servers is not economically sustainable. In general, IT organizations have a tendency to add capacity rather than take on the more difficult task of controlling demand, contributing to growth in power consumption.

As a corollary to Moore's Law and a tribute to the Hawaiian god of fire, I propose *Pele's Law*. Power consumption and heat will increase to the point where data centers cannot sustain the number of servers that the real estate can accommodate.

The solution is to deploy servers more strategically. We've started a

"Kill-a-watt" program at *CareGroup* and are now balancing our efforts between supply and demand. We are more conservative about adding dedicated servers for every new application and more likely to challenge vendor requirements when dedicated servers are requested, examine the efficiency of power supplies and perform energy-efficiency checks on the mechanical and electrical systems supporting the data center.

We have also begun to extensively use VMware, Xen and other virtualization techniques. This means we can host farms of Intel and AMD blades running Windows or Linux, deploying CPU capacity on demand without adding hardware. We're connecting two geographically distant data centers using low-cost dark fiber and building "clouds" of server capacity. We want, move and load-balance virtual servers without interrupting applications.

Managing a data center is no longer simply a facilities or real estate task. We've hired a full-time power engineer to manage the life cycle of our data center, network closets and disaster recovery facilities. New blade technologies, Linux clusters and virtualization are great for on-demand computing, but power and cooling are the new infrastructure challenge of the CIO. *

WANT OUR OPINION?

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READERS' LETTERS

Stressing the Point

I IN THE ARTICLE "It's Not Easy Here in Target Stress, QD Says" (News, Aug. 21), William Cross was quoted as saying, "One of the big reasons [IT is a stressful occupation] is we work very closely with computing equipment that in today's world doesn't fail. That's high stress because if there are errors, they are probably ours."

It is apparent that Cross hasn't spent much time actually working with technology, or hasn't had an open and honest discussion with his staff. How many times do we work with software or hardware that simply fails to deliver? How often do technicians have to spend hours applying hot fix after hot fix to fix a problem that the vendor never seemed to admit existed? How many times does a project get

dumped on a technician with an unrealistic time frame for collaboration and no time for adequate testing? The answer to these questions is the same: very frequently.

I have worked with individuals like Cross, and about the only thing you can do when someone doesn't live in the real world is find another position. Hopefully, your new boss won't have his head in the sand.

Alan James
Network administrator,
Houston

YOUR ARTICLE totally missed the mark. Stress is generated by poor leadership and the side effects it creates (i.e., measuring keystrokes instead of results). Most people, if managed and led properly, are energized by the problem-solving, late-night pages

and daily challenges of being in IT. Having a bad leader with no vision, common sense or communication skills, causes stress.

Bruce McDonald
IT architect, Scottsdale, Ariz.

It Shouldn't Be IT vs. Everyone Else

I COULDN'T AGREE more with Bruce A. Stewart's article "Think About Messages You Send" (Opinion, Aug. 14). As an IT director at a national company, I find that sometimes users can be overwhelmed by technical data that's useless to them. A newsletter is a good way to communicate with these users, but Stewart is right that you have to take the time to "do-it-on-it." The more IT can relate to the people it supports, the more it will

be accepted into the organization and seen as part of the team. In some organizations, I sense an atmosphere of IT vs. the rest of the group. You have to educate people on what the IT department is doing and talk to users as people.

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COMPUTERWORLD welcomes comments from its readers. Letters will be edited for brevity and clarity. They should be addressed to: Janet Eschle, letters editor, Computerworld, PO Box 9171, 15 Green Street, Framingham, Mass. 01701. Fax: (508) 879-4643. E-mail: letters@computerworld.com. Include an address and phone number for immediate verification.

IBM.



Based on published power usage data available from IBM Corporation, the IBM PS/2 model 7000J1 BaseSystem with 2048 dual core 2M cache processor, 8MB cache memory, 10MB 5.25" HD HDK, dual Ethernet, dual Floppy Channel can use up to 75% less power than the HP B2100C with dual core 2M cache processor, 8MB cache memory, 10MB 5.25" HDK, dual Ethernet, dual Floppy Channel. Assigned and maximum May 21, 2000. IBM, the IBM logo, BaseSystem and Logo Book Control are trademarks or registered trademarks of International Business Machines Corporation in the United States and/or other countries. Intel, the Intel logo, the Intel Inside logo, and Intel Xeon are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and/or other countries. Other company, product, and general names may be trademarks or service marks of others. ©2000 IBM Corporation. All rights reserved.



..INFRASTRUCTURE LOG

..DAY 16: These servers are so hot, we're running the A.C. at full blast, and the thermometer is still pushing 140°. Had to relax the dress code in the server room. No choice. It's towels and flip-flops until we get this heat problem under control.

..Gil says he's lost a lot of weight. I hadn't noticed.

..DAY 17: I found a cooler answer to our heat problem: the IBM BladeCenter® with Intel® Xeon® Processors reduces the overall amount of power required by the system. The BladeCenter is designed to respond automatically to power events and can use up to 37% less energy! Less power. Less heat. Less money. Less stress.

..Oh, apparently HR had a problem with the dress code but couldn't call and tell us, since the phones had melted.



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TECHNOLOGY

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BI at Age 17

BY JIM HARRIS
A 17-year-old boy has become the youngest person to be named a *Forbes* magazine "Billionaire." PAGE 36



SECURITY MANAGER'S JOURNAL

Enterprise DRM Back to the Future

Malware threats in the last decade have been a constant threat to intellectual property. But the threat now goes a step further. PAGE 34

OPINION

The E-Voting Blame Game

Robert F. Mills Jr. says to blame anyone for the problems with e-voting is to blame the voters. PAGE 38

Virtual THE PROCRUSTINE

Despite the technology, most IT managers have not yet fully embraced virtualization. Here's why.



MATT DATTILO, CIO at ParkQuest, says his server virtualization effort has been "pretty smooth." But many other IT shops are still holding back.

A LTHOUGH ENTERPRISE server virtualization is a new data center standard. In less than two years, the life sciences company has gone from experimenting with VMware ESX Server on a few machines in its development group to deploying 250 virtual server instances in its Boston data center. "Our journey has been a pretty smooth one," says CIO Matt Dattilo. But even as the Wellstar, Miss. based company, prepares to deploy the technology in its two largest data centers, most of Dattilo's peers are still looking the other way.

In a computerworld's latest quarterly Virtual Server survey, 59% of the 311 IT managers polled said they have no plans to use server virtualization.

For more than one reason, they say they're testing the technology, and not one quite ready for production servers. America's said they have followed Pyrkard Inc.'s example and made virtual machines a default server technology standard for many data center applications. "Most companies are still working on it in smaller areas, consolidating their servers," says Gartner Inc. analyst Martin Forrester.

The technology is maturing rapidly, but most organizations are just starting to climb the adoption curve. IT executives cite a litany of reasons why they're hesitant to move forward. Obstacles include the need to train administrators, and the lack of vendor competition, and concerns about the availability and quality of management tools. They also worry that some vendors won't support applications running on virtual machines.

The survey shows that the reasons for considering virtualization differ depending on the size of the organization. While more than half of large companies cite consolidation as the primary reason for adopting server virtualization, companies with fewer than 500 employees are most interested in ease of deployment and manageability. And some smaller companies are looking at virtualization to solve business continuity challenges.

Bob Payton, IT director at Bethesda, Md.-based Game Design Remedies Inc., says he's eager to convert his entire business case for virtualization. He has been using VMware ESX Server and VMware's vMotion ESX Server, and he plans to roll out ESX Server later this fall. "I see virtualization as our primary motion story," Payton says. With the ab-

(Continued on page 41)

EMERGING TRENDS

What new technologies hold the most promise for your company?

- 1 Virtualization
- 2 Mobile/ wireless (30%)
- 3 Service Models

Source: Forrester Research, Inc. (www.forrester.com)
Survey conducted Jan. 14-15, 2007
Sample size: 1,000 IT professionals

TECHNOLOGY

10.23.06

Q&A

BI at Age 17

Howard Dresner, who coined the term "business intelligence" in 1989, evaluates 17 years of BI and looks at its future. **PAGE 38**



SECURITY MANAGER'S JOURNAL

Enterprise DRM Back to the Fore
Mathias Thurnman had lost funding for his effort to protect intellectual property, but the CIO now puts it back on the table. **PAGE 34**

OPINION

The E-voting Blame Game

Robert L. Mitchell says electronic voting technology has turned into a convenient scapegoat for all that goes wrong at the polls. **PAGE 38**

Virtual

Despite the technology's promise, most businesses have yet to deploy virtual servers. Here's why.



AT PERKINELMER INC., server virtualization is a new data center standard. In less than two years, the life sciences company has gone from experimenting with VMware ESX Server on a few machines in its development group to deploying 230 virtual server instances in its Boston data center. "Our journey has been a pretty smooth one," says CIO Matt Dattilo. But even as the Wellesley, Mass.-based company prepares to deploy the technology in its five largest data centers, most of Dattilo's peers are still kicking the tires.

In Computerworld's latest quarterly Vital Signs survey, 51% of the 314 IT managers polled said they have no plans to use server virtualization.

BY ROBERT L. MITCHELL

Fewer than one in five said they're testing the technology, and just one quarter use it for production servers. A mere 4% said they have followed PerkinElmer's example and made virtual machines a default server technology standard for many data center applications. "Most companies are still working with it in smaller areas, consolidating a few servers," says Gartner Inc. analyst Martin Reynolds.

The technology is maturing rapidly, but most organizations are just starting to climb the adoption curve. IT executives recite a litany of reasons why they're hesitant to move forward. Obstacles include the need to train administrators, cost, the lack of vendor competition, and concerns about the availability and quality of management tools. They also worry that software vendors won't support applications running on virtual machines.

The survey shows that the reasons for considering virtualization differ depending on the size of the organization. While more than half of large companies cite consolidation as their primary reason for adopting server virtualization, companies with fewer than 500 employees are most interested in ease of deployment and manageability. And some smaller companies are looking at virtualization to solve business continuity challenges.

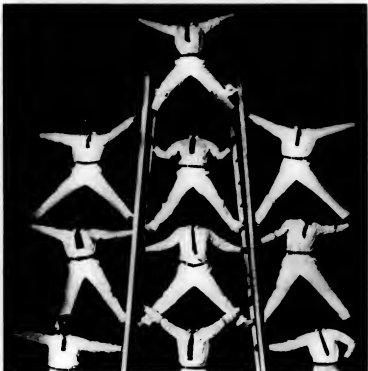
Rod Payton, IT director at Bethesda, Md.-based Case Design/Remodeling Inc., says disaster recovery makes the business case for virtualization. He has been testing Microsoft Corp.'s Virtual Server and VMware Inc.'s VMware ESX Server, and he plans to roll out ESX Server later this fall. "Cost savings isn't our primary motivation," Payton says. With the abil-

Continued on page 30

What is the biggest barrier to server virtualization?

1. Lack of management tools
2. Lack of vendor competition
3. Cost

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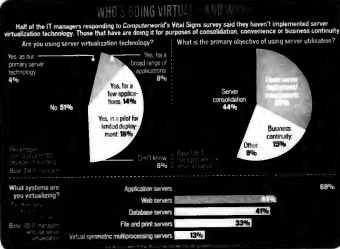
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the virtualization market. "We're not going to be the only ones to do it," says VMware's CEO, Pat Gelsinger. "We're going to be the first ones to do it." VMware's success in the market is a testament to its ability to create a product that is both easy to use and powerful. "We're going to be the first ones to do it," says VMware's CEO, Pat Gelsinger. "We're going to be the first ones to do it." VMware's success in the market is a testament to its ability to create a product that is both easy to use and powerful. "We're going to be the first ones to do it," says VMware's CEO, Pat Gelsinger. "We're going to be the first ones to do it." VMware's success in the market is a testament to its ability to create a product that is both easy to use and powerful.

Fear Factor

Some VMware customers are still a bit nervous about the technology. "We're not going to be the only ones to do it," says VMware's CEO, Pat Gelsinger. "We're going to be the first ones to do it." VMware's success in the market is a testament to its ability to create a product that is both easy to use and powerful. "We're going to be the first ones to do it," says VMware's CEO, Pat Gelsinger. "We're going to be the first ones to do it." VMware's success in the market is a testament to its ability to create a product that is both easy to use and powerful.



that server, he says he'll reveal the technology "down the road."

John Norton, CEO at Insurance Auto-Action's Inc. in Webster, Ill., has been testing VMware, but he says he doesn't trust the technology enough to use it on the 150 servers that run the company's main business. During an interview, it is sold every 10 seconds, and many have come in electronically. With so many items a week, Norton says he can't afford problems. "It is super mission critical stuff. When it isn't the tech, it isn't on the bottom line," he says.

In early testing of VMware, a virtual server inexplicably reverted back to a prior configuration. That corrupted the systems, which had to be re-created from tape. Norton says explanations from his vendors, VMware and Microsoft, haven't been forthcoming. "I put a lot of the classic, ambiguous finger-pointing," he says. "Nobody has been able to give me a root cause, and this thing is never seeing production until

I know why this happened." Even if those answers come, Norton says, he'll start out slowly by using the technology only on his print servers.

Bob Holstein, CEO at National Public Radio Inc., isn't worried about the reliability of VMware's ESX Server, which he calls "rock solid and production-worthy." He's testing the product now, and plans to deploy a small redundant core production servers later this year. If all goes according to plan, applications servers with low utilization rates will be consolidated and then moved to a collocation facility to make room for more servers that handle live digital audio feeds for NPR's radio programs. These servers will stay on-site as a backup, he says. "These laptops and servers are not going to support a virtual environment, and this is no mission-critical to that risk," Holstein says.

"I have a 'show me' attitude about VMware right now," he says. *(Continued on page 32)*

VIRTUAL SERVER 2005

Under VMware's ESX Server, which runs directly on the system hardware, Microsoft Virtual Server 2005 R2 uses virtual machines, or guest operating systems, to host other instances of Windows. Alternatively, Virtual Server is similar to VMware Server (formerly GSX Server). Both products are free. Virtual Server 2005 R2 SP2, which is currently in beta, supports hardware-accelerated virtualization in the x86 processor, from Advanced Micro Devices Inc. and Intel Corp. Windows Shared-Host Service has been enhanced so that a physical server and all applications can be captured in a single snapshot rather than requiring individual backups of each guest operating system.

WINDOWS SERVER LONGHORN

The "hypervisor" software in the Longhorn release of Windows Server will directly compete with ESX Server. Longhorn will ship sometime in 2007, and the virtualization capabilities will roll out about six months later, says John N. Microsoft's group manager for server

WHILE VMWARE HOLDS THE LEAD

While VMware holds the lion's share of the server virtualization market, several competing products are available—or one in the works. Here's how a few of the key players stack up.

virtualization describes the hypervisor as a stripped-down version of Windows. Longhorn will support both Windows and Xen-enabled versions of Linux as virtual servers. While users still have to pay a Windows Server license for the hypervisor, Enterprise Edition users will be able to run guest instances of Windows up to four virtual machine sessions without additional licensing fees.

VMWARE

VMware, a unit of EMC Corp., offers both Virtual Server and ESX Server as part of its VMware Infrastructure suite. VMware has the

most advanced tools. The recently released Version 3 added the Consolidated Backup and Distributed Resource Scheduler tools for dynamic load balancing across virtual machines. Another new tool, VMware HA, automatically restarts virtual machines running on one physical server on a backup server in the event of hardware failure.

XEN

Both Novell Inc. and Red Hat are including the open-source Xen hypervisor into their Linux distributions. XenSource Inc. has released Xen Enterprise, which supports virtual machines running many Unix and Linux distributions. It will also support Windows virtual machines by year's end, says Simon Crosby, chief technology officer at XenSource. Xen Enterprise can run on a 32-way machine, while VMware can only scale up to a four-processor machine. "We're a little lacking in terms of total and polish," Crosby acknowledges. But, he adds, "we're about one-tenth the cost."

ROBERT L. MITCHELL

Continued from page 26

ity to move virtual machines, "we can fail over in real time or in a very short time," he says. "We'll be able to implement disaster recovery that we don't even have today." But he's also cautious and plans to roll out virtualization gradually over six months. "I'm not going to put myself in a corner based on something a vendor says. I want to see it work," Payton explains.

VMware is the dominant vendor, with 59% of the virtual machine market, according to IDC. Microsoft currently offers Virtual Server 2005, which runs on top of Windows, but it plans to incorporate a more powerful "hypervisor" virtualization layer in the upcoming Longhorn release of Windows Server. That version, which won't require a host operating system, will more directly compete with VMware's ESX Server.

In the Linux realm, the Xen hypervisor within the popular Linux distributions from Red Hat Inc. and SUSE Linux AG will soon provide another alternative. Anticipation of those changes may also be keeping some people on the sidelines.

"There's confusion over where things are going," says Reynolds. "Do I invest in VMware now, whereas if I wait another 18 months, I can have Microsoft virtualization that could be a whole lot less expensive and work with my Windows servers better?"

Fear Factor

Shahri Mehta, IT director at Occident Pharmaceuticals Corp. in Waltham, Mass., is testing Microsoft Virtual Server 2005. So far, so good, he says, but Mehta has reservations about upsetting the status quo. "Putting it in production scares the daylights out of me," he acknowledges. And since he has just a few dozen servers to manage, the most common motivation for adopting virtualization — consolidation — isn't a big concern. "It's not going to allow me in a meaningful way to reduce staff or operating costs," Mehta says.

PerkinElmer first started using virtual machines in 2005 in a project designed to address space, power and cooling problems in its Boston data center by consolidating physical servers. Jeff Brittain, IT director for the city of Hickory, N.C., found another way to achieve a similar goal. He tested Microsoft Virtual Server 2005 but decided to migrate 40 rack-mounted servers to IBM Blade servers instead. "That is accomplishing the consolidation we were looking at," he says. With no pressing reason to go ahead with Vir-



tual Server, he says he'll revisit the technology "down the road."

John Nordin, CIO at Insurance Auto Auctions Inc. in Westchester, Ill., has been testing VMware, but he says he doesn't trust the technology enough to use it on the 180 servers that run the company's auction business. During an auction, a car is sold every 40 seconds, and many bids come in electronically. With 750,000 auctions a year, Nordin says he can't afford problems. "This is super-mission-critical stuff. When it isn't there, we can see it on the bottom line," he says.

In early testing of VMware, a virtual server inexplicably reverted back to a prior configuration. That corrupted the system, which had to be restored from tape. Nordin says explanations from his vendors, VMware and Microsoft, haven't been forthcoming. "I got a lot of the classic multivendor finger-pointing," he says. "Nobody has been able to give me a root cause, and this thing is never setting production until

I know why this happened." Even if those answers come, Nordin says, he'll start out slowly by using the technology only on his print servers.

Bob Holstein, CIO at National Public Radio Inc., isn't worried about the reliability of VMware ESX Server, which he calls "rock-solid and production-worthy." He's testing the product now and plans to do a small rollout on production servers later this year. If all goes according to plan, application servers with low utilization rates will be consolidated and then moved to a collocation facility to make room for more servers that handle live digital audio feeds for NPR's radio programs. Those servers will stay on physical hardware, however. "Those [application] vendors are not going to support a virtual environment, and they're too mission-critical to take that risk," Holstein says.

"I have a 'show me' attitude about [VMware] right now," he says. *Continued on page 32*

■ VIRTUALIZATION JOINS

Oracle's VMware ESX Server, which runs directly on the system hardware, Microsoft Virtual Server 2005 R2 runs virtual machines, or guest operating systems, on top of another instance of Windows. Alternatively, Virtual Server is similar to VMware Server (formerly ESX Server). Both products are free. Virtual Server 2005 R2 SP2, which is currently in beta, supports hardware-enabled virtualization in the latest processors from Advanced Micro Devices Inc. and Intel Corp. VMware Shadow Copy Services has been enhanced so that a physical server and all apps on it can be cloned in a single snapshot, rather than requiring individual backups of each guest operating system.

■ VIRTUALIZATION ADVANCES

The "Appliance" editions in the Longhorn release of Windows Server will directly compete with ESX Server. Longhorn will ship sometime in 2007, and the virtualization capabilities will roll out about six months later. Jon W. McDonald, Microsoft's group manager for server

virtualization, describes the hypervisor as a stripped-down version of Windows. Longhorn will support both Windows and non-enabled versions of Linux on virtual servers. While users still have to pay a Windows Server license for the hypervisor, Enterprise Edition users will be able to run guest instances of Windows in up to four virtual machines without additional licensing fees.

■ VENDOR

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■ NEWS

Both Novell Inc. and Red Hat are including the open-source Xen hypervisor into their Linux distributions. NetSource Inc. has released Xen Enterprise, which supports virtual machines running on its and Linux distributions. It will also support Windows virtual machines by year's end, says Simon Cowley, chief technology officer at NetSource. Xen Enterprise can run on a 32-way machine, while VMware can only scale up to a four-processor machine. "It's a little lacking in terms of speed and scale," Cowley acknowledges. But, he adds, "we're about one-fourth the cost."

— ROBERT L. MITCHELL



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the fact that VMware's virtual machines are not just clones of physical machines, but are also capable of running multiple operating systems simultaneously. This means that a single physical machine can host multiple virtual machines, each running its own operating system. This is a significant advantage for businesses that need to run multiple operating systems on a single physical machine. For example, a business might need to run a Windows-based application and a Linux-based application on the same physical machine. VMware allows this to be done easily and efficiently. Additionally, VMware's virtual machines are highly portable, meaning they can be moved between physical machines without any special configuration. This is another significant advantage for businesses that need to be able to move their virtual machines around easily.

Another key feature of VMware is its ability to create virtual machines that are indistinguishable from physical machines. This means that a virtual machine can be used in exactly the same way as a physical machine, with no special configuration or software. This is a significant advantage for businesses that need to be able to use their virtual machines in exactly the same way as their physical machines. For example, a business might need to use a virtual machine to run a specific application. VMware allows this to be done easily and efficiently, without any special configuration or software.

Finally, VMware's virtual machines are highly secure, meaning they are protected from unauthorized access. This is a significant advantage for businesses that need to be able to protect their data and applications. For example, a business might need to run a virtual machine that contains sensitive data. VMware allows this to be done easily and efficiently, without any special configuration or software.

Overall, VMware's virtual machines offer a number of significant advantages for businesses. These include the ability to run multiple operating systems simultaneously, the ability to create virtual machines that are indistinguishable from physical machines, and the ability to create virtual machines that are highly secure. These advantages make VMware a highly attractive option for businesses that need to run multiple operating systems on a single physical machine.

Slow Uptake

Despite the many advantages of VMware's virtual machines, their uptake has been slow. This is primarily due to the fact that many businesses are still using physical machines. This is a significant barrier to the adoption of VMware's virtual machines. Additionally, many businesses are still using older operating systems, which are not compatible with VMware's virtual machines. This is another significant barrier to the adoption of VMware's virtual machines. Finally, many businesses are still using older hardware, which is not capable of running VMware's virtual machines. This is a third significant barrier to the adoption of VMware's virtual machines.

Despite these barriers, VMware's virtual machines are still a highly attractive option for businesses. This is primarily due to the fact that they offer a number of significant advantages. These include the ability to run multiple operating systems simultaneously, the ability to create virtual machines that are indistinguishable from physical machines, and the ability to create virtual machines that are highly secure. These advantages make VMware's virtual machines a highly attractive option for businesses that need to run multiple operating systems on a single physical machine.

BARRIERS TO ADOPTION

What do you consider the barriers to adoption of virtualization technology?

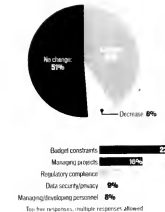
- 1 Lack of necessary skills in the organization
- 2 Not convinced there are benefits
- 3 Don't see a simple point of failure for multiple virtual servers
- 4 Cost
- 5 Application software not supported on virtual machines
- 6 Software licensing

Base: 1017 managers across all server platforms. Source: Computerworld survey, Oct. 19-22, 2000.

Vital Signs

In Computerworld's second quarterly Vital Signs survey, disaster recovery and security were the two leading short-term priorities among the 204 IT managers surveyed. And many respondents said they were moving forward with business intelligence and Web services projects. They also said they've concerned about budget constraints and managing multiple projects.

Comprehensive Checkup: For more results of our Vital Signs survey and its quarterly breakdown, visit www.computerworld.com



Continued from page 30

now," Holstein says, adding that staffers need to get plenty of hands-on experience with the technology before moving to a production environment.

Nordin agrees. "People who haven't worked in any, partitioned environment shouldn't underestimate what their system engineers need to learn," he says. "Make sure you put the training dollars in."

"Virtualization is kind of a leap of faith," says Mike French, senior network engineer at PerkinElmer. He has spent time explaining the technology to his peers. "It's a tough thing to break the barrier, but if you build the environment rock-solid with redundancy and safeguards, nobody should ever have a problem."

Although the technology has been in use for several years, it's still common to find applications that aren't supported on virtual machines. "A lot of vendors won't certify applications as VMware-compatible," Dattilo says. "In most cases, we assumed the risk, unless it was a mission-critical application."

A VMware spokesman says that the problem has diminished. Indeed, a few of Dattilo's vendors, such as Hyperion Solutions Corp. and Business Objects SA, have begun supporting virtual machines since he started working with the technology. As for the others, Dattilo says that most software vendors' support organizations will work with his staff on problems, but he hasn't had any so far.

Nordin says the fact that some software vendors still don't support applications on virtual servers is evidence that the market still isn't fully mature.

"Those types of issues have been long resolved in the MVS, VM and Unix space," he says, adding that server virtualization products "need to get going." With Red Hat, SUSE and Microsoft embedding hypervisors into the Linux and Windows operating systems, however, application vendors will have little choice but to support it, analysts say.

Software vendors aren't the only ones who've been slow to support their products running in virtual servers. Jon Elsassner, CIO at The Timken Co. in Canton, Ohio, says IT staff resistance to deploying homegrown applications on virtual machines has stopped some projects. "Some internal application-support personnel are a bit leery of it," Elsassner says, but he expects attitudes to change over time.

Slow Uptake

Even companies that have embraced virtual server technology have limited its penetration into the data center. Those that have adopted virtualization have, on average, only about 20% of their environment virtualized, according to IDC analyst John Humphreys.

After a pilot last year, Timken went on to virtualize 39% of its servers. It now has 125 virtual servers running on six quad-processor physical machines, but Elsassner has no plans to expand beyond that. The 100 Windows and SQL servers supporting a new SAP ERP software implementation are off-limits to virtualization, he says. "At this point, we're just glad it's running," Elsassner says.

At PerkinElmer, Dattilo's goal is to have 52% of servers virtualized by the time the current project there is completed. That includes application servers with relatively low utilization levels, but others, such as Exchange Server mailbox nodes, are staying put.

Python plans to roll out virtualization at Case Design/Remodeling this fall. "We'll stay away from Exchange and SQL Server" and focus on low-utilization applications like domain controllers and file- and print-sharing servers, he says. Most users aren't ready to consider virtualization for important applications, says IDC analyst Steven Elliot. "The really mission-critical stuff is further down the line," he says.

Tools for managing virtual machines are still evolving, and their availability is "still a little light," says Dattilo. However, he adds that tools included with the recently introduced VMware Infrastructure 3 Enterprise Edition have solved some of his problems.

Currently, every virtual machine on a physical server needs its own instance of backup Exec. VMware Consolidated Backup eliminates that problem.

Distributing loads across virtual machines — a time-consuming, manual process today — can be automated using Distributed Resource Scheduler. Payton has been testing with the previous version of VMware and says, "We're running into CPU utilization problems because the limit is set statically." He and Dattilo both plan to migrate to the new version.

With VMware so far ahead of the competition, there's little pressure on pricing today. "Software licensing costs are a little high, and their maintenance is out of this world," says Dattilo. Application software licensing on virtual machines is also in flux. "There's a lot of confusion among application vendors as to how those will be licensed," he says, noting he doesn't want to pay a per-processor premium for running on a quad-processor machine when an application is running in a virtual machine and using just a fraction of those resources.

Analysts expect the adoption curve to accelerate this year as users become more comfortable with virtualization technology. Says Elliot, "2006 is the year of production for large enterprises."

But that doesn't mean everyone should rush ahead. "If you don't have a clear benefit from virtualization today, you can wait," says Reynolds. That said, most companies will find at least some immediate benefits, whether from consolidation or reduced server configuration and deployment costs. Elsassner says server procurement time savings made his project worthwhile. "It used to take two weeks to deploy a new server," he says. "Now we can do it in two days, and in an emergency, we can do it in an hour."

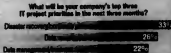
A compromise strategy is to focus on "high-value production deployment" but put off broader implementations, says Reynolds. The next version of Windows Server will offer technology to compete with VMware in 18 months or so, and Linux distributions with virtualization technology will be here even sooner. With those competitive pressures, "VMware could become significantly less expensive," Reynolds says. ■

Why are some applications not supported on virtual servers?

1. Not enough hardware resources
2. Not enough hardware resources
3. Custom or single point of failure for virtual servers
4. Cost
5. Application software not supported on virtual machines
6. Software licensing

In Computerworld's second quarterly Vist Signs survey, disaster recovery and security were the two leading short-term priorities among the 314 IT managers surveyed. And many respondents said they were moving forward with business intelligence and Web services projects. They also said they're concerned about budget constraints and managing multiple projects.

► Comprehensive Coverage: For more results of our Vist Signs survey and respondents' demographics, visit www.computerworld.com



The top two responses, multiple responses allowed.

What changes do you expect in your IT spending in the next 12 months?

Change	Percentage
Decrease	41%
Stay the same	41%
Increase	18%

What will be your biggest management challenge in the next three months?

Challenge	Percentage
Managing multiple projects	22%
Managing financial systems	16%
Managing business intelligence	10%

The top two responses, multiple responses allowed.

What changes do you expect in your IT head count in the next three months?

Change	Percentage
Decrease	26%
Stay the same	66%
Increase	8%

Percentages don't add up to 100 because of rounding.

Source: Computerworld's Vist Signs survey, November 2008. All rights reserved.



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Enterprise DRM Back to the Fore

Our security manager had lost funding for his effort to protect IP, but the CIO puts it back on the table. By Matthias Thurman

THIS CIO called me into his office recently to show me something. I've learned that when he wants to show me something, I should be prepared to spend some long nights at work. That's what happened this time as well.

What he wanted to show me was related to digital rights management. I have mentioned before that I have tried to deploy enterprise rights management to protect our company's intellectual property. With DRM, one can

encrypt a document and then "wrap" it in a digital envelope that applies certain permissions or policies to it. Permissions can be as simple as a list of authorized recipients, and policies can do things like restrict the recipient's ability to copy and paste, save, print or send.

My initial attempt at deploying DRM was not very successful. As the project manager, I had defined most of the requirements, researched vendors and selected a single vendor to conduct a pilot. I had even gone so far as to have a Solaris server configured, and all that was left to do was to obtain the rights management server software. But then funding for the project was "deferred." That was just a nice way of telling me it had been cut.

I still haven't seen any funding. When I was hired here, I was told that protecting intellectual property was a priority, so you would expect executives to be excited about deploying DRM. It's quite funny,

actually, when I think about the countless hours I've spent researching and conducting project management meetings for various initiatives that have never received funding, I don't mind doing the work. I always learn something. Most initiatives involve either new and emerging technologies or something I've deployed in the past but need a refresher on.

As the manager, though, I have to be careful not to get too involved in projects, since I have a department to run and don't have time for things like configuring servers. That was thrown to the side, however, when the CIO called me in.

He had spent the previous evening playing around with the Microsoft Windows Rights Management Services (RMS) client and demonstrated it to me using his Microsoft Passport. Passport, now called Live ID, was designed as a universal key-in service. It's supposed to let users log into many Web sites using one account, though it has never really caught on. But RMS can use Live ID as a valid credential to encrypt and verify a user's association with a document or some other electronic content. My CIO was so excited, he wanted to set up a demonstration for a group of executives on the In-

tellectual Property Protection Steering Committee. His idea is that if he can convince them that RMS is a worthwhile technology, they will fund an initiative to revisit DRM.

RMS is an appealing method for DRM, since the client and server software are freely available and most Microsoft Office applications are already RMS-enabled. There is a per-seat cost once deployed, but there is no initial cost for the software.

Passport Problems

I agreed to a proof-of-concept deployment of RMS, but we won't be using Live ID credentials. Live ID requires users to create the identification, which could cause some problems. I created a Passport ID many years ago, using my Yahoo e-mail address for validation. Unfortunately, I wasn't able to use the same ID within my company, since I couldn't bind my corporate e-mail address to my existing Passport ID.

So instead, we've installed the Microsoft Rights Management Server. The idea is that the RMS client will talk to Active Directory to obtain the location of the RMS server. (You have to configure what is called a "service connection point" within your corporate Active Directory infrastructure.) Once the client makes the connection to the server, it obtains the policies that apply.

This has turned out to be a clean and easily controlled method for deploying RMS. The installation of the server software took all of 10 minutes. For our proof-of-concept demonstration, we created two policies. The first we called the Intellectual Property Protection Steering Committee Only, or IPPSC-Only, policy. A document or e-mail with that policy applied can be

opened by only the half-dozen members of the group with read-only privileges. With this policy, we're demonstrating that we can allow a small group of people to share documents among themselves. If you're not a member of the group, you won't be able to open the document or e-mail, even if you're an employee of the company.

The other policy, which we called Internal Use Only, allows anyone in the company with a domain account to open a document or e-mail. There are no other restrictions, so as long as you're an employee, you should have full control over any document or e-mail that has this policy attached.

I had our Windows expert create an install package so that the client could be installed with minimal effort by the end user. Remember, the audience for this test is a bunch of executives. If they have to click through a lot of install screens, they'll claim that the software isn't user-friendly.

The presentation to the steering committee went well, but naturally there were a number of questions, all beginning with "suppose." For example, "Suppose that I needed to view a protected document at a customer site," or "Suppose I wanted to send a protected document to someone who wasn't an employee." I have a list of about 15 such questions that I will have to research and answer. But the goal of this proof of concept was to introduce a group of executives to a technology that, if deployed properly, could prevent the theft of intellectual property and save the company money. I believe I accomplished that goal. For now, I'll just sit back and wait for the checkbook to open. ■

WHAT DO YOU THINK?

This week's journal is written by a real security manager, Matthias Thurman, whose name and employer have been disguised for obvious reasons. Contact him at matthias_thurman@yahoo.com, or join the discussions in our security blog: computerworld.com/blog/security. To find a complete archive of our Security Manager's Journal, go online to computerworld.com/secjournal.

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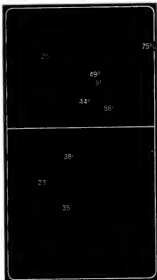
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Source: Gartner, "Business Intelligence: Market Overview 2008"

HOWARD DRESNER coined the term "business intelligence" in 1989 while an analyst at research firm Gartner Inc. At that time, the software industry was mired in acronyms like DSS (decision support system) and EIS (executive information system), and Dresner was seeking a term that would elevate the debate and better define the analysis of quantitative information by a wide variety of users.

He left Gartner in 2005 to join Hyperion Solutions Corp. as chief strategy officer. Dresner recently talked with IDG News Service reporter China Martins about the past 17 years of BI and its evolution into "business process management" (BPM).

Does today's definition of BI differ from what you originally intended? It's probably been redefined a little. It's all about ways to deliver information to end users without needing them to be experts in operational research. Early on, some companies tried to make the term even broader than "quantitative information" to include unstructured content. But it became clear that it was a simple problem which needed to be solved with structured content. That provides far more value to business than trying to build the entire ocean. BI is in the middle, [with] structured information at one end and the user at the other end.

Back in 1989, only a select development group understood what it was about and were trying it. I felt like the lone voice in the wilderness for years. Some people said business intelligence was an oxymoron.

Have the general improvements in computer technology made BI more readily adoptable? Possibly, possibly not. It's more how you work out the value you're really going to get out of it. You do find a lot of BI was shelfware or partial shelfware, meaning it already got installed but people didn't use it. We'd just give someone a query tool and a data warehouse and say a prayer. It probably wasn't enough. [We figured] we'd give them query tools and warehouses, and somehow life would be better.

The next big thing is how to give people insight. Say the cost of a product line slipped; you know that nugget of insight. Then you need to figure out why

it happened — is it an error, a trend? Instead of the approach [of], "Here's a query tool, hope you find something impactful," we're figuring out how to get actionable information into everyone's hands.

Business performance management is built on BI, but it goes beyond that: It's also thinking about operational and planning capabilities. You need to develop plans: How do you know whether information is good or bad? Whose gut feeling do you go with?

BPM is the next big thing. It's sort of what BI is growing up to become. Data quality matters [because BPM is] tied to operational planning. If you do it right, you have to really believe in the numbers.

What has held up BI adoption? It's typically not technology that holds adoption back: It's business culture and organization. Technically, we've come a long way. Information objects are getting so much more sophisticated and intelligent. If we could fast-forward in a time machine and grab the software of five years' time,

it still wouldn't increase the rate of adoption.

You've got to go through that cultural knowledge of "Everybody knows how I'm doing." If you have perfect transparency with BI, it's not an issue; partial transparency is the issue. It's "I'll show you mine, but I can't see all of yours."

Second-tier management is concerned about losing their secured information in the best possible light. Once BI is in place, people can get concerned and reveal hidden agendas. There are no more secrets. The right people have access to what they need.

There are three groups: early adopters who just dive in, those who suffer from inertia and a small group trying to work against goals of the organization selfishly.

How do industries stack up in terms of BI adoption? What's the geographic distribution of BI users?

Finance is all over it; they've got no choice. For years, consumer packaged goods [companies] were one of the early innovators. Probably 35% of people using BI are in finance, then consumer packaged goods, retail, manufacturing and government, and then it trails off. Everyone understands it's important. There's some health care and education, but they both have limited IT budgets.

The geographies where BI is extremely well established and quite mature are North America, Western Europe and Australia. The emerging markets are in Asia-Pacific, including Japan, and South America. China is growing, but they don't have the inclination to spend money on BI; they want to get it for cheap. That will change.

How will BI develop? Customers want to buy a portfolio of functionality; they want it to be fluid. Service-oriented architecture plays into it, and Web services. For instance, before a company grants someone financing credit, you'd want to access their propensity to pay. It's about managing a process and integration in context of the process. We support the management of process with technology. Before, we did the analysis in isolation.

BI will persist. We're seeing an inflection point in the market and hearing more about BPM and RPM enabled by BI. ■




BI
at age
17

Q&A The father of 'business intelligence' looks back at the term he coined — and forward to what may be the next big thing.

The World According To Stephen

I am the shepherd of resources.
The ringleader of processes.
The conductor of an inventory.
In transit across three continents.

This is my world.
My world runs on
Dynamic Networking.



Dynamic Networking from the new AT&T

BRIEFS

Open-source Tool Supports Windows

A Hyspoc Inc. has announced that the new version of its Hyspoc HQ open-source systems management software adds Windows to the list of operating systems it supports, bringing the total to nine. The San Francisco-based company said Hyspoc HQ lets systems administrators use a single interface to monitor, set alerts for and analyze any Windows application, including Exchange, Internet Information Server, IIS and SQL Server. A free version is available at www.hyspoc.com/downloads. The enterprise version includes additional tools; it has an average annual price of \$500 per managed machine. Site licenses are available for large deployments.

Humana Releases Help Desk Software

A Humana Software Inc. in Tampa, Fla., has released Version 7.5 of its Footprints software for Web-based help desk and customer support. Developed by Ultra Press Software Inc., which was recently acquired by Humana, Footprints 7.5 can automatically record resolution processes, fill in time fields based on local time zones and compare metrics across days, months or other time intervals. Per-agent licensing starts at \$1,500; a starter package is priced at \$5,995 for server software and three agents.

Juniper Unveils Three Appliances

A Juniper Networks Inc. in Sunnyvale, Calif., last week announced the DX 3200 and DX 3600 data center acceleration appliances and the WTC 500 WAN application acceleration appliance. All three have software upgrades to improve application throughput, Juniper said. The WTC 500, available now, starts at \$24,995; software starts at \$5,795 for a 10-site license. The DX 3200, due in the first quarter of 2007, will cost \$24,995. The DX 3600, available now, costs \$49,995.

ROBERT L. MITCHELL

The E-voting Blame Game

IF YOU THINK Microsoft has security PR problems, just look at Diebold Election Systems, which is entangled in a seemingly endless imbroglio over computerized voting machines. The vendor has been under continuous assault by academics, advocacy groups, security experts and government officials over technical and security-related glitches involving its touch-screen e-voting systems and software.

Some criticism has been deserved, but in other cases, problems in the field have more to do with the dubious practices of the officials operating the machines than with the technology itself.

With touch-screen e-voting systems, also called direct recording equipment (DRE), there's no paper ballot to hold on to as the physical embodiment of a vote and no way to know that your electronic ballot really dropped into the electronic black box. Although the electorate may feel safer with paper, fully electronic systems should be more flexible, reliable and efficient.

Computers have been used successfully to read, tally and report on paper ballots for years. Punch-card readers and optical scanners feed voting results into back-end tabulation and reporting systems. DRE technology takes automation a step further. It was supposed to alleviate paper-handling problems, such as the infamous hanging chads that sometimes afflicted punch cards, but it has brought its own challenges.

While some of the problems associated with e-voting are technology-based, many simply amount to a lack of best practices. For example, e-voting machines initially didn't generate paper records, so Diebold now includes a thermal printer. The printed summary, viewable through a window, reassures the voter and provides a paper-based alternative that officials can use to verify the electronic tabulations. But the Election Science Institute, in review-



ing a Maryland election, worried that paper jams or printer malfunctions could cause "profound" problems. The advocacy group suggested extensive training of poll workers.

Training is clearly necessary. Some officials don't even have the most basic procedures down. During a recent Maryland election, officials in one county failed to deliver to the polls the access cards voters needed to operate e-voting machines.

In another county, officials couldn't operate e-voting machines because they didn't have their passwords. Politicians blamed the technology. One lawmaker introduced legislation to ban it.

But politicians have no one to blame but themselves. The government provided funding to acquire e-voting machines, but it budgeted little to train people on how to operate the technology, according to a September report by the Computer Science and Telecommunications Board, an arm of the National Research Council. Any IT professional could have told them that the cost of acquiring technology is a small portion of total cost of ownership. The potential for chaos in the November election, when an estimated 40% of the population will use DREs, is exacerbated by that miscalculation.

What's worse, there's an appalling lack of concern for security in some states. For example, it's common in some locales to distribute e-voting machines to the homes of election officials for "sleepovers" for several days prior to an election. With physical security

practically nonexistent, the disclosure of a vulnerability in e-voting machines that could allow someone with physical access to reprogram the device made the situation much more serious. A Florida official acknowledged the sleeper practice but was quick to place full responsibility on the vendor.

That's not to say that the e-voting machines haven't had problems. Vulnerabilities have cropped up, and Diebold has been accused of being slow to disclose vulnerabilities after discovering them. Glitches have caused machines to crash. And critics want more outside scrutiny of the proprietary code.

Nonetheless, e-voting technology has slowly improved over time. But that perception of a lack of cooperation and openness has fanned suspicions and spawned a cottage industry of alienated academics and public advocates who are all too eager to trumpet to the press every potential deficiency they discover. Often, those conclusions appear to have been reached and publicly announced without consulting the engineers who designed the systems.

Computerized voting can work, but not without the public's support. Testing by the U.S. Election Assistance Commission (EAC) isn't enough. Diebold and other e-voting vendors need to work within the framework of an independent technical group with representatives from industry, government, academia and other sectors. That organization should establish a set of technology standards, create a review process and certify compliance for e-voting systems. It should also build on the EAC's Best Practices Toolkit to develop better procedures.

E-voting isn't going away. The technical problems will be solved. But that's the easy part. Getting attitudes to change — and getting politicians, election officials and poll workers to implement the technology properly and be accountable to best practices — will be the bigger challenge. ▀

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Ahead of the Curve: Optimizing Application and Business Performance

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Registration and Networking Breakfast

8:30am to 8:40am

Introduction and Overview

Julia King, Executive Editor, Events and National Correspondent, Computerworld

8:40am to 9:20am

Market Overview and Trends

Patrick Moroney, President & Partner, The Barner Group LLC

9:20am to 10:00am

Application Performance at TD Ameritrade: An End-User Case Study

David Berger, Chief Infrastructure Architect, TD Ameritrade

10:00am to 10:15am

Refreshment and Networking Break

10:15am to 10:50am

Application Performance Assurance Case Studies:

It Pays to be Predictable

Andrew Hittle, Vice President, Quality Assurance Solutions, Compuware

10:50am to 11:25am

Application Performance at Humana, Inc.: An End-User Case Study

Ramu Kannan, Director of IT, Humana, Inc.

11:25am to Noon

Panel Discussion

Moderator: Julia King, Executive Editor, Events and National Correspondent, Computerworld

Panelists: David Berger, Chief Infrastructure Architect, TD Ameritrade; Ramu Kannan, Director of IT, Humana, Inc.; Andrew Hittle, Vice President, Quality Assurance Solutions, Compuware; Patrick Moroney, President & Partner, The Barner Group LLC

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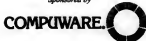
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IT MENTOR Yogi Berra, PMP

Project manager Ralph Sacco (left) discovers new insights into his line of work from the ever-quotable Yankee legend.
PAGE 44

Career Watch

Jerry Luftman of the Society for Information Management discusses employers' concerns about attracting, developing and retaining IT professionals. Plus, we look at the latest employment numbers, the skills CIOs are seeking and your employer's health care costs. **PAGE 45**

OPINION

IT Attitude Check

Treat your customers as if they could take their IT business elsewhere, says Bart Perkins. It's more and more likely that they can.
PAGE 50



The at the

What CIOs look for in their top leadership teams reflects the changing role of IT in business.

WHEN YOU look at the IT leadership team at Regions Financial Corp., you see a diverse group of individuals. The vice president of application delivery advanced through the business ranks, as did the CIO, while the other five team members have had solid careers in IT. The vice president of technology risk management is known for his strategic and broad technical knowledge, while the vice president of telecommunications has a more tactical, get-it-done approach. The vice president of production services is a natural communicator who connects well with people throughout the organization. The director of information management and enterprise architecture hails from outside the banking industry and has a strong data management background. The vice president of the project management office has been at Regions for more than 25 years, with management experience in several technical areas.

But the team members also bear some strong similarities. Most would score off the charts on an analytical-thinking test, and all are voracious problem-solvers. They see IT as a department that needs to be run as a business, and there's no question in their minds that their common job is to support the bank's strategy.

When you combine all these differences and similarities in a team, the group becomes stronger than the sum of its parts, says John Dick, CIO at the \$84.6 billion financial organization in Birmingham, Ala. This can be invaluable when problems arise. For instance, a recent downturn in the performance of the bank's online banking system prompted the leadership team members to jump in and apply their various approaches and skills rather than leave the problem to the application delivery group.

Dick says many leaders have yet to learn about the strength diversity brings to a team. "You see it all the time — people selecting leaders who are exactly like themselves, whether they're heavily analytical or very creative," Dick says. "And while homogeneous teams can accomplish a lot in a short amount of time, to take it to the next level, you need a team with diverse experi-

ence and backgrounds."

His team didn't always perform at such a high level. When the group was formed five years ago, its members were more focused on their individual functions, Dick says. That meant it would be needed to spend more of his own time bringing the right mix of resources to bear when issues arose.

But now, especially as the IT group takes on higher-impact projects that cross many functional areas of the bank, "there's been a shift," he says. "Now, everyone knows each other's skills and capabilities, and everyone gets engaged in problem-solving, decision-making and fact-finding around lots of different topics."

Running With the Big Dogs

The Regions group is a good example of what it takes to climb to the top ranks of IT leadership and then thrive in that rarified air. While technology prowess is still important, it takes a back seat to leadership skills and solid business acumen, Dick and other CIOs say. Many IT leaders still rise through the technology ranks, but the elevator doors now open exclusively for those who can effectively lead other people and who put business concerns first.

"This wasn't always true. Just a few years ago, IT leaders were looking for people with specialized skill sets — the network guy, the e-mail person — and they wanted it all in-house," says Sheleen Quish, a consultant at Cutter Consortium in Arlington, Mass. "The whole trick was to get the right skills at the right level, at the right price."

Today, however, those skilled specialists have been replaced by people who can lead not just internal workers but also external vendors and integrators to drive business objectives, she says. "It's a smaller group of people that have the ability to work as a team and who don't think of themselves in silos," Quish says.

In addition, the skills, backgrounds and capabilities needed on the top IT team are so varied that IT leaders realize they can't fill the bill with one profile or type. When Chief Technology Officer Gary Greenwald was forming his five-person leadership team at TD Ameritrade as New York, for example, he says he was conscientious about mixing personalities and strengths.

"We do a great deal of work to understand the mix of people on the team," he says. "If someone is strong in two, three or four areas, we want to offset that with individuals with skills in three or four other areas — that's when you put a great team together."



THE STRONG, WILLING and competent that companies require to lead IT leaders have undergone many changes in the past few years. Some of the most valued characteristics are team, vision and communication. It's not just about technical skills, but about the ability to make it into job descriptions or resumes. Gary Greenwald, CIO at TD Ameritrade, what about some of these previously or now obsolete that are increasingly valued in IT leaders.

Connectivity

For years, technologists have been eager to improve their communication skills. But it's not just about connecting with people and skills similar to connect with them. "Communicating to leadership and putting out information," Greenwald explains, "Connecting to find your component of a strong

strategy who can take information in and use it effectively internally." Greenwald says his company looks for people who can communicate about their vision and what they think to their executives or their clients to ensure that they're on the same page.

Courage

If leaders look for people who are courageous enough to show their perspectives, even when they threaten to upset the status quo. An example is changing a project midway through because you see that it's no longer critical to the business or that a change in the technology landscape leaves a different approach. "As human beings, we're hard to avoid conflict, but if we're truly going to be a partner with the business, we have to engage in these tough conversations, no matter how challenging," Greenwald says.

Creativity

As businesses strive for innovation in their products, services and processes, IT can play a strong role in facilitating the creative process and supporting the results. "It needs to be in the hands of the business to bring new products and services, and we need to ensure we're not just looking at the technology but at the business," Greenwald says.

One of the best ways to foster creativity is to encourage the team to think outside the box. "We need to encourage the team to think outside the box, to be creative, to be innovative, to be creative, to be innovative, to be creative, to be innovative," Greenwald says.

—MARY BRANDL

That's why CIOs are not just looking for highly capable individuals anymore; they're looking for people who can blend their skills, talents and personalities into a smoothly operating team. At Regions, for instance, teamwork is so important that a couple of people with business expertise and strong technology capabilities were actually let go because "they fought the team environment," Dick says. They wanted to be the Lone Ranger and get all the credit for their own group, and that's not tolerated here.

"We won't allow one of our team members to fail," adds Steve Zimmerman, vice president of technology risk management at Regions. "We'll cross lines to watch each other's backs."

Non-negotiables

But for many CIOs, there are certain competencies that are must-haves for every member of the top IT team. When Jody Davids, CIO at Cardinal Health Inc. in Dublin, Ohio, formed her 12-person IT team last year, her

No. 1 objective was to find people with strong leadership capabilities. And no wonder: These people have to function in a company that, because of its many acquisitions, is undergoing fast growth. Two years ago, Cardinal Health went through a radical shift to a shared-services strategy, centralizing previously autonomous IT departments throughout the world. "They need to deal with constant change in an orderly fashion," Davids says.

Her hand-picked team includes four people who head the IT "centers of expertise," which handle business management, IT strategy, risk management and enterprise architecture. Another team member is in charge of the IT infrastructure group, and another leads the application development area. Six additional people lead the business-partner teams; their main job is to ensure business/technology alignment.

But no matter which roles they play, the most important thing each team member brings to the picture is what Davids calls "a bundle of skills" around

communication, strategic thinking, facilitation, influence, the ability to foster "followership" on a team and the wherewithal to work through complex situations. They also need to be likable, knowledgeable and trustworthy. Davids adds: These leadership capabilities are even more important than the person's previous experience, she says.

A good example is Pegge LaVelle, the woman Davids chose to lead the business management center of expertise and who had previously run the customer service organization at Cardinal Health. "I asked her to run the business management area, and she said she had nothing like that in her background," Davids says. "But when I thought about what it took to be successful in that role, it wasn't about finance. I needed a master diplomat, a person very skilled at building relationships and who could negotiate tough situations with client groups when pulling budgets together — and this is the person who came to mind right away."

Davids persuaded LaVelle to take the job, pointing out that she could hire people with financial and budgetary backgrounds to support her. "She had never envisioned doing anything like this, but it turns out I was right. She's become extremely effective," Davids says.

Another example is Jim Egan, the leader of the IT infrastructure group, whose background was not in infrastructure but in application development. "I knew he was a strong leader with a great deal of acumen around the business of running IT, which you need when you're managing an enormous budget and a significant number of assets and you're cutting large deals with suppliers on a regular basis," says Davids. She also knew that he was able to assemble and manage a strong team and that he had excellent strategic development and execution capabilities. Likewise, Steve Collignon, the person chosen to lead the risk management area, had previously run Cardinal Health's technology infrastructure. Although he had no explicit experience in risk management, it was more important to Davids that he was capable of building a brand-new operation and had an exceptional ability to work effectively with people.

"Anybody in IT understands that if it weren't for change, we wouldn't have a job," Davids says. "The ability to lead people through change is what makes the difference."

Brandl is a Computerworld contributing writer in Newton, Mass. Contact her at marybrandl@verizon.net.

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Market Overview and Trends

Carlos Recalde, Managing Director, Successful Technology, LLC

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A Holistic Approach to End-to-End Service Assurance

Dr. John S. Camp, Chief Information Officer, Wayne State University

10:00am to 10:15am

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Application Performance Assurance Case Studies: It Pays to be Predictable

Andrew Hittle, Vice President, Quality Assurance Solutions, Computware

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IF BASEBALL and project management have one thing in common, it's the direct relationship between teamwork and success. Yogi Berra, a baseball legend with a unique approach to management and life, is a particular favorite of mine, so I recently asked myself, "What if Yogi were a project manager?"

As I thought about it, I realized that Yogi has a lot to say about my line of work. Many of the most famous quotes that have been attributed to him seem to bear directly on the art and science of project management.

PLANNING

“You’ve got to be very careful if you don’t know where you’re going, because you might not get there.” Have you ever managed a project for which the premise was faulty? If this issue is not resolved during project initiation, you have a major-league problem.

It's like when the umpire expects your pitcher to hit a tiny strike zone. Executing to a faulty premise is unpleasant at best and debilitating at worst. Your team can't get traction, and morale inevitably suffers. If the client (or your management) sets unreasonable standards, you have to get out of the dugout and argue balls and strikes. But you need to get your facts straight and communicate with the decision-makers in no uncertain terms.

COMMUNICATION

“I didn’t really say anything I said.” Miscommunication: the gift that keeps on giving. How many times have you held a project meeting and been surprised that it wasn't the "check the box" event you expected? Yogi knew what he was talking about: What I think I say and what you think you hear can be two different things. Who's on first?

DECISION-MAKING

“If you come to a fork in the road, take it.” Foster a culture of decisiveness and clear execution. I can't think of one thing better for morale, credibility and project effectiveness. This doesn't mean making arbitrary decisions or carving plans in stone. It means putting in the effort with manage-

ment and team members to make well-thought-out decisions that naturally stand the test of time. And it means weighing the trade-offs in terms of cost, prestige and momentum when facing the possibility of changing decisions that have already been made.

MEASURING PROGRESS

“You’d better eat the pizza in four pieces, because I’m not

IT MENTOR

hungry enough to eat six.” Earned value (once calibrated, simulated and adopted) is a

very good barometer for justifying course corrections — if you stick with it. But I have been on projects where the management team has tossed out the measures when the news was troubling bad. You can slice and re-slice the numbers, but it's the same pizza. In the end, you'll still get indigestion.

EXECUTING

“Think! How the hell are you gonna think and hit at the same time?” Yogi clearly understands the distinction between planning and execution, and so should you. Once the plan is in place, get out of your team's face and let them do the voodoo that they do so well. I find that during the execution phase, the best approach for me is low-touch — unless things are going very wrong. Try not to tweak things to death. How can your team keep their eyes on the ball if you're constantly yelling instructions from the dugout?

MANAGING

“You can observe a lot just by watching.” Remember management by walking around, or

MBWA? There's no better way to get that all-important gut check on project stats. But remember, there's a difference between chatting it up with the guys in the dugout and second-guessing every fastball.

MEETING DEADLINES

“I know I was going to take the wrong train, so I left early.” Have you ever been on a project where no tasks were completed late? Me, neither. It's a fact that some tasks are going to be late.

But there's something you can do about it. While not appropriate for every project, one option is to make it a "project theme" to be early whenever you can. For example, you can authorize some overtime for key tasks from the start. Build up a lead from the get-go even though you aren't behind (yet). This way, you can move things along and reduce your overall risk, especially when you get on the wrong train later on.

CLOSING

“This is like déjà vu all over again.” We perform the "lessons learned" project phase for a reason. Yet how many times have we gotten deep into the next build phase only to realize there are still loose ends — just like the last time? If we don't apply the lessons learned, did we really learn them?

You've heard the saying that the definition of insanity is doing the same thing over and over again and expecting a different result. When you watch the game films, pay attention. *

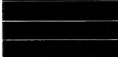
Sacco is a project manager at a large East Coast technology company. Contact him at ralph@sacco.com.

By Ralph Sacco

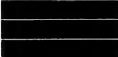
Career Watch

What's Hot

Percentage of CIOs who said Network Mgmt. is the most important IT function



Percentage of CIOs who said Network Mgmt. is the most important IT function



NOTE: Survey respondents were permitted to cite multiple skills.

SOURCE: ROBERT HALF TECHNOLOGY QUANTIFY IT 2006. NOTES AND DETAILS REPORT A NATIONAL POLL OF MORE THAN 1,000 CIOs FROM A RANDOM SAMPLE OF U.S. COMPANIES WITH MORE THAN 100 EMPLOYEES.

... but held back by a dearth of talent, says AEA

The U.S. networking industry added more than 140,000 jobs between January and July, nearly double the 75,000 such jobs added in the first half of 2005, according to a study released in September by the Washington-based American Electronics Association (AEA), a cableable research trade group that represents all segments of the technology industry.

"We're seeing the biggest six-month gain in tech-hiring jobs that we've seen in any six-month period since 2000," said Josh Jensen, senior director of the group's research.

Technology manufacturers saw their revenues increase by 10% in the first half of 2006, according to the U.S. Commerce Department.

high-tech services sector— including communications, software, and engineering and tech services—saw a net increase of 107,000 jobs, for a total of 4.6 million jobs. In that sector, engineering and tech services added the second most jobs (40,000), followed by software services, which added 14,000 net jobs.

Even the communications services sector saw its first net job growth since 2000, adding 12,700 jobs, according to the AEA. "The long-term growth is still lagging that of the private sector," Jensen said. "What we see from data is that both companies are filling for individual positions inside the U.S., but they're having a hard time filling those positions. This growth could accelerate if companies were better able to get more workers for those positions."

Through backlogs in the talent market, communications and IT services companies are expected to add 100,000 to 120,000 jobs in 2006, according to the AEA.

Net job increase in the first half of 2006 for the high-tech services sector



Q & A

Q: How do you see the future of IT management consulting?

Since the beginning of time (or at least since the beginning of IT), executives have worried about business alignment as their top concern in IT management surveys. And while alignment once again proved top billing in the Society for Information Management's recently released 2006 study, concerns about attracting, developing and retaining IT professionals were cited as the second-biggest cause of worry among the 500 IT leaders who participated in the annual survey.

Computerworld's Thomas Haffman spoke with Jerry Lefkowitz, the author of the SIM study, who is also executive director of graduate information systems programs at Stevens Institute of Technology in Hoboken, N.J.

Some people argue that there is no shortage of skilled IT professionals and that the market is flooded with them. Does that ring with what you're seeing?

I have not seen any signs that the market is flooded. Just the opposite. People are saying there aren't enough qualified entry-level and experienced people. I think that [in flooded markets] was true at the beginning of the decade, when companies were downsizing and not hiring as much. But I think we're past that. And because of the negative images often spread about the industry at the beginning of the decade, there are fewer people entering the market, and this is going to be [a labor shortage] problem in a few years. There'll be more of a shortage, and companies will be forced to go overseas [for contract workers]. All the buzz about offshore outsourcing is becoming a self-fulfilling prophecy.

Functional area knowledge, such as in consulting or finance, is among the top 10 skills survey respondents said they were seeking in entry-level hires. Are most computer science students obtaining this kind of experience? One of my concerns from an entry-level perspective is that the kids don't get that much experience.

What about internships? Internships help, absolutely. In fact, that's fundamental to a successful program.

The survey found that the average tenure for CIOs is 3.6 years. Any idea how this compares with previous studies? It seems the their tenure has lengthened in recent years. This year, 54% of the CIOs were in their jobs from years or less. Last year, it was 42%. In the past, the average tenure was 10 months. Over the years, I've seen a steady increase, when it's been clear to her years.

What's behind that? I think it's huge—that CIOs are leaving more or less to be better managers of people in the basement.

HEALTH CARE COSTS AND COVERAGE

The Henry J. Kaiser Family Foundation and the Health Research and Educational Trust released their 2006 Employer Health Benefits Survey late last month. Here are some numbers gleaned from the phone survey of 3,159 randomly selected public and private employers.

■ Premiums for employer-sponsored health coverage rose an average of 7.7% in 2006. That's down from 9.2% growth in 2005 and well short of the recent peak of 13.9% growth in 2003. But it's still more than double the rise in workers' wages (3.9%) and overall inflation (3.3%).

FACTS

■ Premiums have increased 67% since 2000.

■ Family health coverage now costs an average of \$11,400 annually, with workers paying an average of \$2,973 toward those premiums. That's about \$1,354 more than in 2000.

■ The percentage of small companies (those with three to 99 employees) that offer health care coverage fell from 90% in 1998 to 86% in 2006. Coverage at companies of 100 or more employees decreased from 95% to 93% during that period.



If needed, RALPH SACCO says project managers can learn a lot from the witcrafters attributed to Yogi Berra.

Yogi Berra, PMP

When a project has you stumped, just think: "What would Yogi do?"

IF BUSTLE and project management have one thing in common, it's the direct relationship by which team work and success. Yogi Berra, a baseball legend with a unique approach to management and life, is a particular favorite of mine, so I recently asked myself, "What if Yogi were a project manager?"

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« You've got to be very careful if you don't know where you're going, because you won't get there. » Have you ever mapped a project for its likely premise was faulty? If this issue is not resolved during project initiation, you have a major-league problem.

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« I didn't really say everything I said. » Miss communication the gift that keeps on giving. How many times have you held a project meeting and been surprised that it wasn't the "check the box" event you expected? Yogi knew what he was talking about. What I think I say and what you think you hear can be two different things. What's on first?

DECISION-MAKING

« If you come to a fork in the road, take it. » Foster a culture of decisiveness and clear execution. I can't think of one thing better for morale, credibility and project effectiveness. This doesn't mean making arbitrary decisions or carving plans in stone. It means putting in the effort with manage-

WHEN YOU BERRA was managing the New York Yankees, the parallels between his job and that of a project manager were obvious. But I like to think that he called them MVP catcher — also has a lot in common with me. Think about what a great catcher Yogi Berra does.
• Positions himself between the team and the power league (umpire/customer)
• Stands up for the team when there's a bad call
• Faces his team (literally) and watches them execute throughout the game

ment and team members to make well-thought-out decisions that naturally stand the test of time. And it means weighing the trade-offs in terms of cost, prestige and momentum when facing the possibility of changing decisions that have already been made.

MEASURING PROGRESS

« You'd better cut the pizza in four pieces, because I'm not hungry enough to eat six. » Earned value

IT MEANS

tone calibrated, simulated and adopted is a very good barometer for justifying course corrections — if you stick with it. But I have been on projects where the management team has tossed out the measures when the news was trending bad. You can slice and reduce the numbers, but it's the same pizza. In the end, you'll still get indigestion.

EXECUTING

« Think? How the hell are you gonna think and hit at the same time? » Yogi clearly understands the distinction between planning and execution, and so should you. Once the plan is in place, get out of your team's face and let them do the work that they do so well. I find that during the execution phase, the best approach for me is low-touch — unless things are going very wrong. Try not to tweak things too much. How can your team keep their eyes on the ball if you're constantly yelling instructions from the dugout?

MANAGING

« SACCO is a project manager at a large East Coast technology company. Contact him at ralsph@sacco.com

■ Mostly plays defense
■ Guides the pitcher but lets him call the shots
■ Provides coaching when needed (round visits are management by walking around)
■ Greatly influences the tempo of the game
■ Communicates with opposing coaches to keep them in check (softens the batters)
■ Stays out of the way and is often the backbone of the team but gets little glory.
— RALPH SACCO

MRWAS: There's no better way to get that all-important sign check on project status. But remember, there's a difference between shutting it up with the guys in the dugout and second-guessing every lastball.

MEETING DEADLINES

« I knew I was going to take the wrong train, so I left early. »

Have you ever been on a project where no tasks were completed late? Me neither. It's a fact that some tasks are going to be late. But there's something you can do about it. While not appropriate for every project, one option is to make it a "project theme" to be early whenever you can. For example, you can authorize some overtime for key tasks from the start. Build up a lead from the get-go even though you aren't behind yet. This way, you can move things along and reduce your overall risk, especially when you get on the wrong train. Later on.

CLOSE-OUT

« This is like déjà vu all over again. » We perform the "lessons learned" project phase for a reason. Yet how many times have we gotten deep into the next build phase only to realize there are still loose ends — just like the last time? If we don't apply the lessons learned, did we really learn them?

You've heard the saying that the definition of insanity is doing the same thing over and over again and expecting a different result. When you watch the game films, pay attention. ■

Career Watch

What's Hot

Percentage of CIOs who said IT jobs tech skills are most in demand in their IT departments:

Microsoft Windows Server 2003/2005 administration	80%
Network administration (Cisco, Nortel, Novell)	79%
Database management (Oracle, SQL Server, DB2)	71%

Job categories that are experiencing the most growth within the CIO's departments:

Help desk/end-user support	19%
Networking	18%
Applications development	12%

NOTE: Data is based on 1,000 respondents. See page 46.

... but hold back by a dearth of talent, says AEA

The U.S. technology industry added more than 140,000 jobs between January and July, nearly double the 78,900 tech jobs added in the first half of 2005, according to a study released in September by the Washington-based American Electronics Association (AEA), a nationwide nonprofit trade group that represents all segments of the technology industry.

"We're seeing the largest six-month gain in tech industry jobs that we've seen in any six-month period since 2001," said Josh James, one of the authors of the report.

Technology manufacturers saw a net increase in jobs of 33,300 in the U.S. in the first half of the year, for a total of 137 million jobs, while the

high-tech services sectors—including communications, software, and engineering and tech services—saw a net increase of 107,000 jobs, for a total of 4.44 million jobs. In that sector, engineering and tech services added the most net jobs (89,800) followed by software services, which added 44,500 net jobs.

Even the communications services sector saw its first net job growth since 2000, adding 12,700 jobs, according to the AEA. "The less good news is that despite this, tech industry job growth is still lagging that of the private sector," James said. "What we see from this is that tech companies are hungry for technical positions across the U.S., but they're having a hard time filling these positions. The growth could accelerate if companies were better able to get qualified workers for these positions."

The AEA's findings back up the latest CIO Magazine Tech Poll, which has indicated for some time that CIOs at companies with 5,000 or more employees have been having more difficulty finding and keeping IT workers.

—LINDA ROSENCRANCE

Net job increase in the first half of 2006 for the high-tech services sector



Jerry Luftman

TITLE: Vice president for academic community affairs

ORGANIZATION: Society for Information Management, Chicago

Since the beginning of time for so it would seem, IT executives have identified business alignment as the top concern in IT management surveys. And while alignment once again garnered top billing in the Society for Information Management's recently released 2006 study, concerns about attracting, developing and retaining IT professionals were cited as the second biggest cause of worry among the 140 IT leaders who participated in the annual survey. *Computerworld's* Thomas Hoffman spoke with Jerry Luftman, the author of the SIM study, who is also executive director of graduate information systems programs at Stevens Institute of Technology in Hoboken, N.J.

Some people argue that there is no shortage of skilled IT professionals and that the market is flooded with them. Does that map with what you're seeing?

I have not seen any signs that the market is flooded. Just the opposite. People are saying there aren't enough qualified entry-level and experienced people. I think that [a flooded market] was true at the beginning of the decade when companies were downsizing and not hiring as much. But I think we're past that. And because of the negative images shined up about the industry at the beginning of the decade, there are fewer people entering the market and this is going to be a [labor short age] problem in a few years. There'll be more of a shortage, and companies will be forced to go overseas [for contract workers]. All the buzz about offshore outsourcing is becoming a self-fulfilling prophecy.

Functional area knowledge, such as in marketing or finance, is among the top 10 skills survey respondents said they were seeking in entry-level hires. Are most computer science students obtaining this kind of experience? One of my concerns from an entry-level perspective is that the kids don't get that at most universities.

What about internships? Internships help absolutely. To me, that's fundamental to a successful program.

The survey found that the average tenure for CIOs is 3.6 years. Any idea how this compares with previous studies? It seems like that tenure has lengthened in recent years. This year, 54% of the CIOs were in their jobs three years or less. Last year, it was 47%. In the past, the average tenure was 18 months. Over the years, I've seen a steady increase where it's been close to four years.

What's behind this? I think—I hope—that CIOs are learning how to be more like business executives as opposed to being a technical manager of geeks in the basement.

HEALTH CARE COSTS AND COVERAGE

Dr. Henry J. Kaiser Family Foundation and the Health Research and Promotion Trust released the **2006 Employer Health Benefits Survey** last month. Here are some numbers about how the growth of the privately insured public and private employees.

QUICK FACTS

■ Premiums have increased 82% since 2000

■ Family health coverage now costs an average of \$11,480 annually

■ Average cost of family health coverage in 2006 is \$13,594 more than in 2000

■ The percentage of workers with employer-sponsored health coverage has declined from 65% in 1999 to 60% in 2006. The percentage of workers with employer-sponsored health coverage has decreased from 99% to 98% since 2000.

Premiums for employer-sponsored health coverage rose an average of 7.2% in 2006. The cost of family health coverage in 2006 was \$13,594 more than in 2000. The percentage of workers with employer-sponsored health coverage has declined from 65% in 1999 to 60% in 2006. The percentage of workers with employer-sponsored health coverage has decreased from 99% to 98% since 2000.



_INFRASTRUCTURE LOG

_DAY 45: These underutilized storage boxes have proliferated exponentially. Their inability to share capacity has doomed us. We're trapped in a maze of our own creation.

_DAY 47: I tried to give Gil a boost over this wall, but he pulled a hamie.

_DAY 48: I've taken back control with IBM System Storage™ SAN Volume Controller. It puts my entire storage universe into a simple, virtualized pool. And, unlike EMC, IBM has fourth-generation virtualization technology and over 2,000 customers. I am seeing results.

_Productivity is up. Utilization is up. I.T. guys lost in mazes of data is down.



IBM.COM/TAKEBACKCONTROL/STORAGE

MANAGERS' FORUM



PROJECT MANAGERS are the ones who make sure that a project is completed on time and within budget. In this case, it's a project to build a new computer system for a company. The project manager is responsible for the entire project, from start to finish. He or she must coordinate all the activities, from hiring people to buying equipment. The project manager must also keep the project on track and make sure that everything is done on time and within budget.

By Tom Ichniowski

? We've got some nice documentation tools to help large projects straight, but everyone still wants to just use Word, Excel and maybe MS Project. We got more buy-in on using the new tools from IT's customers than from the IT project managers. How do I help get them on board?

Buried in your question, you've got a few interesting assumptions that I think we need to examine to really get to the heart of the issue.

First, you're assuming that these robust new tools that you've acquired are "nice." We've got to be clear about what makes something a nice tool, just because something is brand spanking new and sports every option on the planet doesn't necessarily make it desirable.

I recently visited a museum where a blacksmith was demonstrating 19th-century manual nail-making. His anvil and hammer were far from shiny and new, but he made impressive nails with these old tools. His tools were well suited to making rough nails from steel

bar, and he was clearly familiar with them. I doubt that this particular blacksmith would have done as well with a computer-controlled machine tool. He knew hammers and anvils and liked them. (Of course, these tools are not very efficient, which is why I had to go to a museum to see them used.)

What makes something a nice tool is its suitability to the job at hand and the user's familiarity with it. So it is with your documentation tools.

Your project managers are probably resisting because they don't consider the tools so nice for these reasons:

1. They don't think the tools are suited to the job. They may feel that the tools don't work at all or require too much additional work for the marginal benefit over Microsoft Office.

2. They don't want to or don't have the time to learn to use the new tools. They are not familiar with them and have no desire to be.

You're also assuming that customer buy-in is evidence of a tool's desirability. It's not. Customers generally care only about results and not process. If I hire someone to paint my living room, I don't care if he uses brushes, rollers or finger paints, as long as the price is good and the room looks the way I want it when I want it. Your customers will probably agree to almost anything you propose that they believe will give them the results they want.

And finally, you're assuming that getting the project managers on board is going to help them. I suspect that they don't feel that you're trying to help—just trying to cram a new tool down their throats. It doesn't sound like you're listening to them or their real concerns. Even if the tools are fan-

tastic, they will resist if they don't feel that you are listening to them. Helping someone get on board sounds a bit too much like "making an offer they can't refuse."

So taking all this into account, I'd suggest the following approach: Back off on the tool, build consensus on the problem, and then sell the solution. It sounds like your current approach is to push a tool as a solution to a problem that the project managers either can't identify or don't agree exists. You probably don't have agreement on either the problem or the solution.

The staff will probably be more willing to learn new things and adopt new work methods if they recognize the problems you are trying to address, agree that these are problems worthy of resolving and accept the long-term benefits they will receive from using the new tools. As it is, you can only hope for grudging compliance rather than real support.

? Everyone talks about how important project plans are, but no one really says why. What is the role of the project plan in the success of a project?

You ask an important question. In general, I find that when a bunch of people all agree on something, they don't really talk about why. As soon as there seems to be a general consensus, the discussion stops, and we assume that we all agree for the same reasons. Of course, nothing could be further from the truth.

The reasons for a project plan that I hear cited most often mainly focus on what happens when you don't have one:

1. Team members don't know what to do.
2. You can't plan for effort, duration or cost.
3. You won't know when you're done.

These are all good reasons to have a plan, but they all seem to assume one thing that rarely happens: The plan will be followed. I've never seen any substantial project that actually followed the details of a plan. No one knows how a project will really unfold.

To me, the most important reason to plan a project is to grapple with all foreseeable issues and approaches. Planning helps prepare the minds of the participants to clarify the goals and the means for achieving them. That way, when the project inevitably deviates from the original plan, they will be prepared to deal with reality. ▶

READERS

IT'S A GOOD IDEA TO HAVE A PROJECT PLAN, BUT NO ONE REALLY SAYS WHY. WHAT IS THE ROLE OF THE PROJECT PLAN IN THE SUCCESS OF A PROJECT?

Tom Ichniowski, a project manager at a large company, writes that he has seen many projects fail because of a lack of planning. He says that a project plan is a document that describes the project's goals, objectives, and tasks. It is a tool that helps project managers to organize their work and to communicate with their team. Ichniowski says that a project plan is also a contract between the project manager and the team. It sets out the rules of the game and the responsibilities of each team member. Ichniowski says that a project plan is a living document that should be updated as the project progresses. It is a tool that helps project managers to stay on track and to avoid problems.

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Imagine rubbing elbows with innovative IT leaders. You can.



Hewlett-Packard Company's Executive Vice President and CIO, Randy Mott addressing the 2006 Premier 100 IT Leaders Conference

The eighth annual Premier 100 IT Leaders Conference is a unique and compelling departure from the standard technology conference. Rather than focusing on vendors and products, the spotlight is on great ideas, strategic use of best practices and real-world leadership from the IT and business executives who are advancing their organizations through technology.

Hear from — and network with — Computerworld's Premier 100 IT Leaders and Alumni, an award-winning set of IT executives with valuable lessons to share, advice you can gain, and relationships available for you to foster.



Harrah's Entertainment, Inc.'s SVP and CIO, Tim Stanley addressing the 2006 Premier 100 IT Leaders Conference

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BART PERKINS

IT Attitude Check

QUICK HITS

IT BUDGETS

2006 IT Budget Compared With 2005

Equal to 2005 Less than 2005



Projected 2007 IT Budget Compared With 2006

Equal to 2006 Less than 2006



2006 IT Budget Allocation



Projected 2007 IT Budget Allocation



SOURCE: ANALYTICS IN ACTION, A COMPTON PUBLICATION, OCTOBER 2006. © 2006 COMPUTER WORLD. ALL RIGHTS RESERVED. JAMES HANCOCK

THE ATTITUDE with which you approach a situation strongly influences how effectively you address it. The way IT organizations think of (and treat) the people who use their products and services has a significant impact, both on IT's effectiveness and on how IT is perceived.

Historically, IT organizations have provided services to "users," a word with primarily negative connotations. *User* rhymes with *loser*. It also brings to mind "being used." Even worse, it calls forth pictures of the recreational drug industry! Simply referring to "customers" instead of "users" can help your staffers develop a better attitude toward the people they serve.

David Maister's book *True Professionalism* (Free Press, 1997) states, "Professionalism is predominantly an attitude, not [just] a set of competencies. A real professional is a technician who cares." A customer care mind-set will influence the way your staff operates.

Here are some ways to achieve that customer-oriented attitude:

- Conduct successful market research.** Most industries do heavy market research before developing new products. Make sure you adequately research the needs of your customers (whether internal or external) when designing or selecting new IT products and services.

- Acknowledge the customer's importance.** Without customers, there is no need for an IT organization. Furthermore, jobs requiring no customer interaction are prime candidates to send to countries with lower cost structures.

- Treat customers respectfully.** The days when IT organizations had all the technical knowledge and could simply dictate terms to users are over. Today's technically savvy customers expect to explore technical issues and develop systems jointly with the IT staff. Anticipate open discussion, technical input,

design compromises and great ideas — particularly from the Web 2.0 crowd.

- Discover the real problem.** Many customers merely express their frustrations or request systems that address the offending symptoms while ignoring the root causes. Successful IT corporations actively listen to their customers in order to discover the underlying problems. Investigate thoroughly — ask questions, clarify issues, and explore multiple possibilities before finalizing systems. Look beyond the boundaries of the customer's complaint.

- Set customer expectations correctly from the beginning.** Be honest and realistic about the effort required, whether you are designing a new system, fixing a problem or preparing a business case. Don't just tell customers what they want to hear, even when they persistently demand that you do. (You will pay later if you succumb.) Continue to manage expectations throughout any IT endeavor. Keep your customers well informed, especially if for any reason costs will increase or deadlines will slip. The closer to a deadline you confront, the more fallout you will suffer. Never surprise a customer about costs or schedules.

- Establish mutual accountability.** Make sure significant commitments (on both sides) are captured in writing. Meet your commitments, and hold customers politely but firmly accountable for any decisions or deliverables to which they have agreed.

- Decline to work on disasters.** Apply what a customer who is about to make a genuine mistake. It is best to decline projects when there is no feasible way to make the customer happy. Losing revenue is preferable to having your reputation compromised by dissatisfied customers.

- Use customer-focused performance measurements.** Most IT organizations need to become better at measuring their own performance in terms that are important to (and understandable by) their customers. At a minimum, measure service levels and calculate accurate unit costs for each IT service provided — even if it means implementing cost accounting.

- Measure customer satisfaction.** Perform regular customer reviews to discover any hidden dissatisfaction. Ask customers how well IT listens, how well IT understands their business, how responsive IT is and so on. Measure your customers' satisfaction levels before they reach zero. Remember that what you measure is what you can manage. In addition, conduct a formal customer satisfaction review at least annually. Ask your customers if they would buy your services again if they had a choice. If they say no, work with them to design a solution before they investigate alternatives.

- IT organizations exist to help customers improve their business operations. Adopt an attitude of appreciation, and start treating your customers as if they might take their business elsewhere. With the wide choice of IT providers and offshore options currently available, many actually can. These days, customer satisfaction is not just necessary for success; it's required for survival. ■

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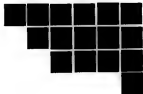
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_INFRASTRUCTURE LOG

_DAY 28: These slow, inefficient boxes don't have enough power to run my high-end business apps. They don't have enough power to do anything except crash.

_Need sleep. Will try to dream that I am I.T. King of a planet that only produces really powerful servers.

_DAY 30: I've got it: the IBM System x[™] with the AMD Opteron[™] Processor. It has more power and more efficiency than I ever imagined in a standards-based server. IBM Xcelerated Memory Technology[™] can let us access data up to 15 percent faster than other servers for maximized performance.* I can finally sleep in my own bed again.

_I have taken back control. I am Ned, benevolent I.T. King of this...uh, data center.



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FRANK HAYES ■ FRANKLY SPEAKING

Password: Obs0l3t

FULLY A THIRD of our users write down their passwords instead of remembering them. That's according to a recent study of 325 enterprise users, conducted by Nucleus Research and KnowledgeStorm. And I'm surprised. Only one-third? It's a small miracle that the number isn't closer to 90%.

After all, what do we ask of users when it comes to passwords? We ask them to choose complex, hard-to-remember passwords. And to choose a different hard-to-remember password for each system.

And then we tell them not to write all those passwords down.

That's crazy. But that's the password as we know it today.

No wonder our help desks spend so much time resetting passwords. And no wonder users compromise security by using Post-its, cheat sheets and text files to keep track of all their passwords. These days there are just too many of them, so something's got to give — whether it's complexity, variety or secrecy.

Passwords were a fine idea back when a user needed just one to log in at a time-sharing terminal. But now it's time to move on to other kinds of authentication, whether that means single sign-on, hardware tokens or biometrics. Let's face it, the password is at the end of its useful life.

And password aren't alone. Plenty of other IT standards were big steps forward in their day — dramatic technological advances that reshaped the face of IT shops and user desktops alike. But time has passed. The world has changed. And they just don't make sense anymore.

Cases in point:

■ **ASCII.** A big improvement over IBM's proprietary EBCDIC character set in the 1960s. But today we do business globally, and ASCII can't even handle euro or yen signs. Fortunately, there's Unicode, a multibyte character set that's built on top of ASCII, handles virtually every alphabet used today and is supported by most major applications and operating systems. It's time for corporate IT to make that our standard, too.

■ **The CRT.** It beat the heck out of the clattering teletypewriter it replaced. But today, cathode ray tube screens are hot, heavy, large, power-hungry, fragile, full of toxic materials and prone to getting blurry. Their only advantage: They're cheap to buy, even though they're much more expensive to use than other display technologies. It's time to apply TCO to the CRT and declare it DOA.

■ **The mouse.** A huge step forward

from keyboard-only menus. But the mouse was designed decades ago for moving a pointer on a TV screen. We can do better today. The current crop of tablet PCs may be lame, but they embody the right idea: directly selecting items with a fingertip or stylus. It's time to cut out the middleman... er, mouse.

■ **The hard disk.** Stand-alone drives in PCs fail. And when they do, data goes away — often very suddenly. That's completely unnecessary. Several small drives could fit in the same space, configured as a RAID array. That would make most disk failures survivable.

■ **Regular backups.** Today's databases are too big, and they can't stand still for frequent snapshots. Besides, backups fail far too often. We're better off with continuous logging of transactions, so instead of a mystery-meat stew of potentially suspect data from a backup, we can rebuild a crashed system by replaying what actually happened. That would make the Sarbanes-Oxley boys happier, too.

■ **Air-cooled servers.** Air was a big improvement over water cooling for mainframes — no more plumbing in the computer room. But the heat generated in data centers continues to soar.

We've passed the point where moving cooled air past racks and racks of servers is efficient. It's time to bring back water or other kinds of direct cooling — and time for vendors to start building support for those cooling systems into blade servers.

Can we dump these technologies that have reached their expiration dates? Not anytime soon — we depend on them too much. But, like passwords, their time is past.

And the sooner we start planning to replace them, the less crazy our work will be. ■



Tightening Up, Loosening Up

This company's Internet use policy is pretty strict, but better than nothing. Then one user is found with more than 100 of pornography on the network. "That the policy only said you couldn't send or receive porn, not that you couldn't have it," reports a pick fish on the scene. "The user was disciplined but kept his job. In the wake of this fiasco, a high-ranking VP decided to spearhead the push for a new comprehensive policy with teeth. Fast-forward about two years: Does who was the first person caught and fired? The VP himself — and was he angry about it?"

What the fish does he want to read this small fish story?

SHARK TANK



Congratulations to Our Finalists!

The SNW "Best Practices in Storage" Award Recipients will Be Honored Thursday, November 2nd at Storage Networking World in Orlando.

Storage Networking World (SNW), in conjunction with Computerworld and the Storage Networking Industry Association (SNIA), proudly presents the eighth SNW "Best Practices in Storage" Awards Program. This program honors IT user "best practice" case studies selected from a field of qualified finalists.

Finalists in each of the following categories are:

Innovation and Promise

- Digital Film Tree, Hollywood, California
- Level 3 Communications, Broomfield, Colorado
- Pixar Animation Studios, Emeryville, California

- The Virginia Department of Motor Vehicles, Richmond, Virginia
- Warner Bros. Entertainment Inc., Burbank, California

Planning Designing and Building Strategic Storage Infrastructure

- Defense Contract Management Agency, Fairfax County, Virginia
- Denver Health, Denver, Colorado
- Industrial Color, New York, New York

- Salisbury University, Salisbury, Maryland
- The AVID Group, Palm Harbor, Florida

Securing the Storage Fortress

- Cbeeyond Inc., Atlanta, Georgia
- George Washington University, Washington, DC
- R.C. Willey Home Furnishings, Salt Lake City, Utah

- Screen Actors Guild - Producers Pension and Health Plans (SAG-PPHP), Burbank, California
- Sinclair Community College, Dayton, Ohio

Storage Reliability and Data Recovery

- APM Terminals, Charlotte, North Carolina
- Chaffin McCall, New Orleans, Louisiana
- Corrections Corporation of America, Nashville, Tennessee

- CSX, Jacksonville, Florida
- Intuitive Surgical, Sunnyvale, California

Systems Implementation

- AOL, Reston, Virginia
- Bardel Entertainment, Vancouver, British Columbia
- CSX, Jacksonville, Florida

- MedicAlert Foundation, Turlock, California
- Pacific Title and Art Studio, West Hollywood, California

Judging Criteria

Judges evaluated and ranked the finalists in each category according to their assessment of storage networking solutions effectiveness and effectiveness against a list of criteria such as:

- Financial return and measurable system impact on customer, assets, retention, growth, overall productivity, customer opportunities or cost savings.
- Strategic importance to the business.
- Substantial customer impact (revenue, retention, expansion).
- Positive impact on other business/operational goals.
- Addressed system and department interdependency issues and heterogeneous platform integration challenges.
- Provided a change, advantage in the business/operational units surrounding and accommodating the deployment of future storage networking solutions.
- Supported the efficient and secure data, information and application sharing between internal, external, business, etc.
- Addressed challenges of data, information and application security, recovery, business continuity, etc.

Thank you to our "Best Practices in Storage" Judges for SNW Fall 2006:

- Yan Aggar, Ogilvy & Mather Worldwide
- Dennis Anderson, Ph.D., Pace University
- George Fennel, VMware
- Sharon Fisher, Computerworld
- Dale Frantz, Active Warehouse Company
- Tony Fuller, Rent-A-Center
- Charles Graham, Center Reson
- Julie King, Computerworld
- Ellen Lary, Lary.com
- Richard Lary, Lary.com
- Lucas Meadows, Computerworld
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